THE Business History REVIEW

HAROLD P. BROWN AND THE EXECUTIONER'S CURRENT: AN INCIDENT IN THE AC-DC CONTROVERSY 143
Thomas P. Hughes

INVESTMENT BANKING AND SECURITY SPECULATION IN THE LATE 1920'S 166
Giulio Pontecorvo

THE EARLIEST FIRE INSURANCE COMPANY IN BERLIN AND BRANDENBURG, 1705–1711 192
Reinhold A. Dorwart

STOCK OWNERSHIP IN THE EARLY NEW ENGLAND TEXTILE INDUSTRY 204
Lance Edwin Davis

BOOK REVIEWS
Are Listed in the Table of Contents

The BUSINESS HISTORY REVIEW

PUBLISHED QUARTERLY BY THE HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

VOL. XXXII, NO. 2 – SUMMER, 1958

The BUSINESS HISTORY REVIEW is published in the Spring, Summer, Autumn, and Winter. Address all communications, including manuscripts and change of address, to Business History Review, 214–16 Baker Library, Soldiers Field, Boston 63, Massachusetts. Telephone KIrkland 7–9800. Regular subscription rate $10 per year. Special rate for teachers and students $5 per year. Single copies and reprints of most articles are available; information on request.

The BUSINESS HISTORY REVIEW does not assume responsibility for statements of fact or opinions made by its contributors.

Contents are currently indexed in the Business Periodicals Index, The H. W. Wilson Co., 950 University Ave., New York City. Entered as second-class matter at Boston, Massachusetts. Printed at the Harvard University Printing Office.

CONTENTS

HAROLD P. BROWN AND THE EXECUTIONER'S CURRENT: AN INCIDENT IN THE AC-DC CONTROVERSY 143

THOMAS P. HUGHES

INVESTMENT BANKING AND SECURITY SPECULATION IN THE LATE 1920'S 166

GIULIO PONTECORVO

THE EARLIEST FIRE INSURANCE COMPANY IN BERLIN AND BRANDENBURG, 1705–1711 192

REINHOLD A. DORWART

STOCK OWNERSHIP IN THE EARLY NEW ENGLAND TEXTILE INDUSTRY 204

LANCE EDWIN DAVIS

BOOK REVIEWS

Forest G. Hill, *Roads, Rails, and Waterways: The Army Engineers and Early Transportation.* Reviewed by Melford E. Monsees 223

D. E. W. Gibb, *Lloyd's of London: A Study in Individualism.* Reviewed by Harris Proschansky 225

A. R. Reynolds, *The Daniel Shaw Lumber Company: A Case Study of the Wisconsin Lumbering Frontier.* Reviewed by Elwood R. Maunder 229

Margaret Case Harriman, *And The Price Is Right.* Reviewed by Ralph N. Traxler, Jr. 232

Mildred F. Stone, *Since 1845: A History of the Mutual Benefit Life Insurance Company.* Reviewed by Harris Proschansky . . 234

Ralph Hewins, *Mr. Five Per Cent.* Reviewed by George S. Gibb . 236

Julius Grodinsky, *Jay Gould: His Business Career, 1867–1892.* Reviewed by Howard F. Bennett 237

By Thomas P. Hughes
ASSISTANT PROFESSOR OF HISTORY
AT WASHINGTON & LEE UNIVERSITY

Harold P. Brown and the Executioner's Current: an Incident in the AC-DC Controversy*

The Age of Electricity was foreshadowed by the "battle of the currents." This almost forgotten controversy had important technological implications, but it is also a macabre chapter in the history of marketing tactics. Westinghouse's superior alternating current system was ingeniously attacked by proponents of direct current. Exploiting contemporary evidence from the penitentiary, the direct-current adherents declaimed against use by the public of a system employed by the state to rid itself of its most dangerous criminals.

By 1888 the alternating current of George Westinghouse threatened the position of pre-eminence held by the direct current of Thomas Edison in the field of incandescent lighting.[1] Edison inaugurated the era of large-scale commercial incandescent lighting in September, 1882, when he illuminated buildings in approximately one square mile of the commercial and financial district near his Pearl Street central-generating station in New York City.

George Westinghouse, four years later, pioneered the development in the United States of an economical system for the transmission of electrical energy over considerable distances. He achieved this end by promoting experiments and installations culminating in a commercially feasible system of incandescent lighting with alternating current.[2] The first demonstration of the system was made

* The author wishes to express his appreciation to the Southern Fellowships Fund for a grant which made possible some of the necessary research, and he also wishes to acknowledge the assistance received from a John M. Glenn grant (Washington & Lee University).

[1] A year later, 1889, the Westinghouse Electric Company held the pre-eminent position in the incandescent lighting business. *Electrical Engineer*, Vol. VIII (1889), p. 75.

[2] The alternating-current lighting system of Westinghouse featured the transformer (often called a secondary generator at the time), the connection of the transformer primaries in parallel, and a generator providing good voltage regulation. None of the fundamental components or principles involved in this system were invented or discovered by the Westinghouse company but the complete system with its commercial potentialities was the conception and implementation of Westinghouse and his engineers. The transformer used by Westinghouse was based on the pioneer transformer of L. Gaulard and J. D.

in Great Barrington, Massachusetts, in March, 1886.[3]

In the 1880's the chief advantage of the alternating-current system over the direct current, or continuous current as it was then known, was the great saving offered by the alternating in the transmission of electrical energy over a distance of more than several miles. This saving resulted from the smaller diameter copper wiring that could be used with alternating current at a time when copper costs were high. The transformer in the alternating network permitted high voltages – and therefore small-diameter wire – to be used for transmission, reducing the high voltages to lower voltages for use with the delicate filament of the incandescent bulb. Economy-minded Edison, aware of the high transmission cost of the direct-current system, had introduced cost-reducing factors in the direct-current system but the savings were not comparable to those offered by the new alternating system.[4]

During the closing years of the decade witnessing the introduction of the competing systems, the issue of alternating versus direct current dominated the arena where the campaigns for the electric-lighting market were fought. Not only were the engineers, scientists, and businessmen involved, but lawmakers and the public were also to play a part. Contemporaries called this the "battle of the currents." [5]

The "battle of the currents" between the direct-current companies and the Westinghouse company brought engagements in a number of areas of competition including the engineering and sales, and

---

Gibbs. The connection of the transformer primaries in parallel – essential for the economical transmission of power – was introduced by the Hungarian firm of Ganz and Company before Westinghouse designed his system. The alternating-current generators used by Westinghouse in the early experiments had been designed and built by the German firm of Siemens and Halske. For an informative account of the development of the alternating-current system by the Westinghouse Electric Company, see Harold C. Passer's *Electrical Manufacturers, 1875–1900* (Cambridge, Massachusetts, 1953), pp. 129–150. Hereafter cited as, Passer, *Electrical Manufacturers*.

[3] William Stanley, a pioneer in the field of electric lighting, conducted the experiments at Great Barrington. Stanley minimizes the role played by George Westinghouse in promoting the system, maintaining that Westinghouse was advised against the alternating-current system by a trusted expert. According to Stanley, Westinghouse's contribution was to make capital available for experimentation but on terms not favorable to Stanley. Only when Westinghouse saw the system developed by Stanley in operation did he decide to enter actively the alternating-current field. William Stanley, "Alternating Current Development in America" (paper read before the American Institute of Electrical Engineers, Feb. 15, 1912), *The Journal of the Franklin Institute . . .*, Vol. CLXIII (1912), pp. 568–573.

[4] Although Edison was to play a part in the AC-DC competition, he no longer had by 1888 a considerable role in the affairs of the electrical industry which he helped to create. He served the Edison companies (especially the Edison Electric Light Company) as a consultant, but most of his time was spent in his laboratory exploring fields other than electric lighting. Passer, *Electrical Manufacturers*, p. 102.

[5] The "battle of the currents" was fought most vigorously in the United States from 1888 until 1895, the year when the great alternating-current generators at Niagara Falls began operation and demonstrated dramatically the advantages of alternating current.

triumphs for both sides in these areas.[6] The economic advantages of energy transmission by alternating current, however, became increasingly clear to the trade.[7] Finding their position in the field of electric lighting so threatened by the lower cost of alternating current's system of transmission, opponents of alternating current resorted to tactics outside the conventional realm of competition.

Before the final exchange had taken place on this newly opened front of the battle of the currents attempts would have been made to create public indignation against an electrical system supposedly endangering life. Efforts would also have been made to outlaw by legislation the advantageous features of the alternating-current system, and to have firmly fixed in the public mind through capital punishment by electrocution the association of alternating current with death.

As this contest – vital not only to rival business concerns but also to the future scientific and technological development of the electrical industry – moved out of the usual realm of competition, it brought into the arena an unorthodox competitor. For several years a person, now almost forgotten, who was neither an outstanding inventor, scientist, nor entrepreneur, played a leading role in the struggle. The man whose name became most closely identified with these aspects of the battle of the currents was Harold P. Brown. Until the spring of 1888 when he wrote a letter to the *New York Evening Post*, Brown was an obscure consulting electrician and inventor with offices in New York City. Shortly afterward, Harold P. Brown became "a man much talked of in those days."[8] Brown's letter initiated the train of events which brought him prominence – or, at least, notoriety – because it was a substantial, incisive, and easily understood attack upon alternating current and those who provided it.

Brown wrote that he could use no other adjective than "damnable" in describing alternating current, and that its manufacturers and distributors had more concern for their pocketbooks than the public welfare. He argued that the public authorities through the agency

[6] For an extended discussion of the various advantages and disadvantages of the two currents, see the series of papers printed in the *Electrical Engineer*, Vol. VII (1888), pp. 166–168, 220–224. Also, see F. L. Pope, "The Westinghouse Alternating System of Electric Lighting," *Electrician and Electrical Engineer*, Vol. VI (1887), pp. 332–342, for the well-stated opinions of an advocate for alternating current who met an accidental death in 1895 – a victim of alternating current.

[7] Edison had developed in 1883 a "three-wire system" of distributing direct current that reduced the cost of the transmission system below the cost of the two-wire system which he had used in 1882. The amount of copper used in the three-wire system for long-distance transmission, however, was still economically prohibitive.

[8] L. B. Stillwell, "Alternating Current Versus Direct Current," *Electrical Engineering*, Vol. LIII (Fiftieth Anniversary Issue, May, 1934), p. 710.

of the New York Board of Electrical Control, following the example of Chicago, should forbid the use of the "fatal" high-voltage alternating current.[9]

Although Brown anticipated that his letter would raise a storm amidst the powerful alternating-current "combine" (two papers had refused to print the letter published in the *Evening Post*), he wrote that he felt obliged to act in the public interest. Accidental deaths by electricity and faulty wiring were not uncommon, and this – according to Brown – was sufficient to cause action on the part of a self-styled public-spirited electrician.[10]

The letter, including suggested regulations prohibiting "fatal" alternating currents was read before the New York Board of Electrical Control on June 8, 1888. The Board had the rules, including one that would limit alternating current to 300 volts (thus removing its advantageous feature), sent to local electric-light companies for comment. It also sent invitations to those wishing to answer Brown to do so at the next meeting to be held in the lobby of Wallack's theater on July 16, 1888.

If Brown had been left unanswered his role in the controversy might have ended with his letter, but the reactions given in response to the Board's invitation constituted a formidable attack not only on Brown's suggestions but also on Brown. As an electrical consultant without formal education in his field he probably felt especially susceptible to any criticism that endangered his livelihood by questioning his technical competence.

On July 16 at Wallack's theater, the Board of Electrical Control heard communications from various proponents of the alternating-current system, including H. M. Byllesby, the vice president and general manager of the Westinghouse company; Henry Morton, the president of Stevens Institute; and Ralph W. Pope, secretary of the American Institute of Electrical Engineers. One letter characterized Brown's statements as absurd, stemming from ignorance or planned falsehood, and designed to mislead a justly concerned but ill-informed public.[11] He was accused of being unduly influenced by companies who stood to gain from the outlawing of alternating current.[12] The Board also heard that Brown had an electrical appli-

[9] Ltr. from Harold P. Brown to the editor, the *New York Evening Post*, June 5, 1888.

[10] Harold P. Brown in a paper read on the occasion of his experiments conducted at the School of Mines of Columbia College on July 30, 1888, and reprinted in his, *The Comparative Danger to Life of the Alternating and Continuous Electrical Currents* ([Place?], 1889), p. 39. Hereafter cited as Brown, *Comparative Danger*.

[11] Ltr. from T. Carpenter Smith to William H. Browne, June 12, 1888, read before the Board of Electrical Control, reprinted in the *Electrical Engineer*, Vol. VII (1888), p. 361.

[12] *Ibid.*, p. 362; and from S. C. Peck to the Board of Electrical Control, reprinted in the *Electrical Engineer*, Vol. VII (1888), p. 363.

ance on the market designed to convert dangerous high-voltage arc-light currents for incandescent lighting, and that its sale was being wiped out all over the country by alternating current, thus prejudicing Brown.[13] Byllesby of Westinghouse argued that alternating current was safer than direct current,[14] but others confined themselves to the more moderate position that transformers and good insulation made alternating current safe.

Brown found the letters of Henry Morton and Ralph W. Pope scientific and dignified, but considered others as unwarranted personal attacks upon him. In Virginia at the time the letters were read to the Board, Brown did not immediately respond, but his rejoinder when it came was ingenious and effective.

In order to substantiate the assertions he had made in the *New York Evening Post* letter and to defend himself against his critics, Brown visited Thomas Alva Edison in his Orange, New Jersey, laboratory and obtained permission to use equipment not available elsewhere.[15] With the equipment Brown intended to experiment with live animals and prove alternating more dangerous than direct current.[16] Although Edison had not previously met Brown ("seemed to be a pretty nice kind of fellow"), he granted the request and instructed Arthur E. Kennelly,[17] one of his principal assistants, to work with Brown.[18]

These experiments made in July satisfied Brown that less than

[13] Smith, *op. cit.*, p. 362. Between 1885 and 1890 Harold P. Brown was issued a number of letters patents for inventions relating to a means for combining the incandescent light and the arc light on the same high-voltage circuit (patents numbered: 325,389; 325,390; 330,465; 337,923; 352,035; 387,615 and 422,910).

Brown subsequently claimed that his "converter" was withdrawn from sale as of 1883 and that he did not intend that the high voltages should be used in homes but in commercial establishments and on the streets where they could be properly safeguarded. Harold P. Brown in a paper read on July 30, 1888, at Columbia College and reprinted in his *Comparative Danger*, pp. 42–43.

[14] Byllesby used the term direct current instead of the conventional term then used – continuous current. It seems likely that this alternating-current advocate may have seen the advantage of reminding the public that, while alternating was converted to a safe voltage before entering the home, the other came "directly" in. Ltr. from H. M. Byllesby to C. H. Jackson, July 14, 1888, read before the Board of Electrical Control, and reprinted in the *Electrical Engineer*, Vol. VII (1888), pp. 367–368.

[15] Harold P. Brown, "The New Instrument of Execution," *North American Review*, Vol. CXLIX (1889), p. 586.

[16] Brown asserted that another objective of these initial experiments was to determine the practicality of an apparatus suggested by him for making continuous current safer. He also maintained that his primary motive was to save human life. *Ibid.*, p. 586. This may have been the approach used to Edison.

[17] Arthur E. Kennelly (1861–1939), who was educated at University College School, London, England, assisted Edison from 1887–1894 and later became professor at Harvard and Massachusetts Institute of Technology. Edison described Kennelly – who was an electrical engineer – as his "walking" set of "tables."

[18] State of New York, "The People of the State of New York, Ex. Rel. William Kemmler, Appellant, Against Charles F. Durston, Agent and Warden of Auburn Prison, Respondent," 2 vols. bound in *Court of Appeals, 1847–1911*, DCCCXCIII (Buffalo, New York, 1890), Vol. II, pp. 648–649. Hereafter cited as *Electrocution Hearing*. Kennelly testified in 1889 that it was not unusual for Edison to allow "experimentalists" – even comparative strangers – to use his laboratory. *Electrocution Hearing*, Vol. II, p. 752.

300 volts of alternating current proved instantly fatal to dogs, but that more than 1,000 volts direct current could be withstood by the animals.[19] He was now ready to give a public demonstration of the deadliness of alternating current.

The audience assembled in the lecture hall of Columbia College's School of Mines on July 30, 1888, did not know the nature of the spectacle they had been invited to witness, but it was understood that this was to be Brown's rejoinder to his critics. Members of the Board of Electrical Control, persons interested in the electrical industry (including the supporters of alternating current), and representatives of the press were present.[20] Brown, assisted by Kennelly of Edison's staff and a Dr. Frederick Peterson,[21] planned to give one of the experiments with animals.

After reading a paper defending his position, Brown showed the audience a 76-pound dog of outwardly mild appearance but characterized as a vicious cur.[22] The unsuspecting animal, imprisoned in a cage, had a front and a hind leg wired for current. With direct current from an Edison dynamo, 300, 400, 500, 700, and finally 1,000 volts were sent through the animal ("the effects of which . . . were heartrending in the extreme"). Many of the spectators left the room and one man pleaded in the name of humanity for the immediate dispatch of the poor animal. Brown remarked, according to one reporter, that the dog "will have less trouble when we try the alternating current. As these gentlemen say, we shall make him feel better."[23] The dog was then dispatched with one application of alternating current at a voltage of 330 and an unmeasured amperage.[24] Brown was heard by the reporter of the *New York Times* to comment that alternating current suited only

[19] Brown, *Comparative Danger*, p. 11.

[20] Individual invitations were issued to the demonstration "in Prof. Chandler's Lecture Room at the School of Mines, Columbia College." Among those receiving an invitation was Thomas A. Edison. The invitation is in the archives of the Edison Laboratory National Monument at Orange, New Jersey. The museum and archives are administered by the National Park Service with Mr. Norman R. Speiden as acting superintendent. Items in these archives will hereafter be identified by "Edison Archives."

[21] Peterson, a physician, had practiced for four years in Buffalo, New York, for three years in a lunatic asylum at Poughkeepsie, New York, and in 1888 was practicing in New York City. He had – according to his own testimony – studied medical electricity, mental and nervous diseases at Vienna, Strasbourg, and Leipzig. Peterson had been using electricity daily in his medical practice for about four years (in New York City by 1889 he was making an average of thirty applications a day of electricity in hospitals and dispensaries with which he was associated). Dr. Peterson's activities are evidence of the early attempts to use the still novel power of electricity for medical purposes. (Harold Brown had at one time sold and adjusted electro-medical apparatus.)

[22] The *Electrical Engineer*, Vol. VII (1888), p. 369. The dog's appearance elicited conflicting reports: although the *Electrical Engineer* thought it "mild," the *New York Herald* reported it as a "large mongrel Newfoundland, with a vicious eye and ready tooth" that bit two attendants while being put into the cage. *New York Herald*, July 31, 1888.

[23] *New York Times*, July 31, 1888.

[24] Brown, *Comparative Danger*, p. 10.

the dog pound, the slaughterhouse, and the state prison. A spectator remarked that Brown's experiment made a Spanish bullfight seem a moral and innocent spectacle by comparison.[25]

Opponents of Brown, upon the conclusion of the experiment at Columbia, attacked the validity of Brown's contention that he had proved the alternating current more dangerous than the direct. According to these critics the resistance of the animal had been substantially lowered by the applications of direct current prior to the animal's receiving the fatal shock of alternating. In order to disprove the position taken by his critics and to avoid an interruption by the S. P. C. A. – a representative of which had protested against the first experiment – Brown conducted more experiments several days later under the supervision of the physician-in-chief of the New York City Health Department.[26] On this occasion Brown dispatched three dogs using less than 400 volts alternating current. Brown reminded the audience that he had already demonstrated that dogs could take more than 1,000 volts direct current and survive. Brown had proved direct or continuous current comparatively safer than alternating – at least to his and his supporters' satisfaction.

After his experiments, and as a result of them, Brown felt so sanguine as to write to Arthur Kennelly, "it is certain that yesterday's work [the second experiment at Columbia] will get a law passed by the legislature in the fall, limiting the Voltage of alternating currents to 300 Volts." Brown also informed Kennelly that he had "lost 12 lbs. over this struggle & am all worn out, but am going to the mountains today to rest, ..." [27] Brown, however, for the next two years was to have little rest.

Brown's *Evening Post* letter, together with his experiments at the Columbia School of Mines and the rebuttals he provoked,[28] initiated

[25] *New York Times*, July 31, 1888. A ballad was composed upon the occasion of the dog's death and read in part as follows:

. . .

The dog stood in the lattice box,
The wires around him led;
He knew not that electric shocks
So soon would strike him dead.

. . .

At last there came a deadly bolt;
The dog, O where was he?
Three hundred alternating bolts
Had burst his viscerae.

Electrical Engineer, Vol. VII (1888), p. 375.

[26] Brown later wrote that he hoped the Board of Health would shut off alternating current in the state. *New York Sun*, Aug. 25, 1889. See footnote 55 for an evaluation of this source.

[27] Ltr. from Harold P. Brown to Arthur E. Kennelly, Aug. 4, 1888, Edison Archives.

[28] For a formidable attack upon the validity of the experiments, see a paper read before the National Electric Light Association by Dr. P. H. Van der Weyde. At the conclusion

the major campaign in the battle of the currents that was to have a grim culmination two years later in the New York State prison at Auburn. However, Brown at this stage of the contest gave scant indication of any knowledge of the course events would take.[29] The awareness of an area of mutual interest shared by Brown, the direct-current concerns, and the State of New York was discovered incidentally by the parties involved; but this common interest was to shape the future of the current controversy.

The State of New York initiated the train of events that would bring it into the fray with Brown and the two electrical systems when the Legislature established a commission to investigate and report on a more humane and practical method than hanging of carrying into effect the death sentence. Although formed in 1886 the commission did not make its report to the Legislature until 1888 and then only after investigating existing methods and considering innovations.

Dr. A. P. Southwick, a member of the three-man commission, suggested to the members the possibility of using electricity.[30] He had witnessed an experiment conducted by the Society for the Prevention of Cruelty to Animals of Buffalo, New York, in July, 1887, that involved the electrocution of several stray dogs.[31] In a circular sent by the commission to judges, district attorneys, sheriffs, members of the medical and electrical professions throughout the state, electricity was included as a suggested alternative to hanging. Other alternatives named on the questionnaire were prussic acid or other poison, the guillotine, and the garrote. Of the 200 replies, 119 advised change from hanging, and of these 75 suggested electricity (81 favored the retention of hanging).[32]

In addition to the results of the poll, the emphatic opposition of

---

of the reading of this paper the Association unanimously adopted a resolution critical of those pitting alternating and direct-current systems against one another and a resolution asserting that neither current was dangerous (Brown subsequently labeled the Association prejudiced (ltr. from Brown to the *New York Evening Post*, Nov. 6, 1889). A draft of the paper – revised by Van der Weyde – was reprinted in the *Electrical Engineer*, Vol. VII (1888), pp. 451–454. According to Brown, Arthur E. Kennelly, Edison's assistant, published a "stinging" reply to the Van der Weyde paper in the *Electrical Review* on Sept. 22, 1888.

[29] In the same issue of the *Evening Post* carrying Brown's original letter attacking alternating current, there was an editorial commending the adoption of electricity for capital punishment, June 5, 1888. No explicit relationship between alternating current and capital punishment was established, however.

[30] *Electrocution Hearing*, Vol. I, pp. 370–371.

[31] The first successful commercial installation of alternating current was made by the Westinghouse Electric Company in Buffalo. The alternating-current central station commenced operations there on Nov. 30, 1886.

[32] State of New York, *Report of the Commission to Investigate and Report the Most Humane and Practical Method of Carrying into Effect the Sentence of Death in Capital Cases . . . Transmitted to the Legislature of the State of New York, January 17, 1888* (Albany, 1888), p. 82, hereafter cited as *Commission Report*. See also *Electrocution Hearing*, Vol. I, p. 370.

the medical profession to the use of the hypodermic needle and the strong support given electricity by Thomas A. Edison influenced the commission to recommend electricity. The medical profession expressed fear that use of the hypodermic needle to inflict death would plant an unfortunate connotation in the mind of the public. Thomas A. Edison's recommendation for electricity greatly influenced Elbridge T. Gerry, the chairman of the commission. Gerry later testified that he consided Edison a minor oracle. "The alternating machines" and alternating current were specifically suggested by Edison who added that he would campaign against capital punishment, but if utilized it should be quick and painless.[33] Elihu Thomson, whose firm of Thomson-Houston was a major distributor of alternating-current equipment,[34] also recommended broken, interrupted, or alternating current as the most humane method.

In its report to the Legislature of January 17, 1888, the commission recommended an alternating-current machine, but the subsequent act of the Legislature only specified electricity and not the type of current. The act further provided that electricity should be used to inflict capital punishment for all crimes committed on or after January 1, 1889, thus establishing New York as the first state to legalize electrocution.

The Legislature charged the Medico-Legal Society of New York with the responsibility of determining the technical details of the best method of carrying out the new law. The physician, Frederick Peterson, who had collaborated with Brown on both demonstrations at Columbia, was named chairman of the committee appointed by the Society to discharge the responsibility. Peterson and Brown cooperated again in preparing the report for the Medico-Legal Society with Peterson doing the physiological studies and Brown the electrical work. They conducted many of their experiments on animals at Edison's laboratory and with the assistance of Arthur E. Kennelly.[35] In answer to objections of those who claimed that experiments with animals smaller than man proved little about the effect of electricity on man, the experimenters dispatched two calves and a horse on December 5, 1888, in the presence of members of the

[33] *Commission Report*, pp. 76–77.

[34] Thomson, distinguished scientist and inventor, advised against alternating current on the grounds of safety, until he found a protective device for the transformer, and then in 1887 his company began the production and sale of alternating-current equipment. Passer, *Electrical Manufacturers*, p. 143.

[35] F. S. Hastings, secretary and treasurer of the Edison Electric Light Company, wrote to Kennelly to arrange for the use of the facilities at the Edison laboratory. Hastings did not want to trouble Edison with the request. Ltr. from Hastings to Kennelly, Nov. 20, 1888, and Hastings to Kennelly, Nov. 28, 1888, both at the Edison Archives.

Medico-Legal Society and Elbridge T. Gerry, the author of the new law.

The *New York Times* reported that the experiment of December 5 proved "the alternating current to be the most deadly force known to science." Opponents of alternating current were undoubtedly satisfied also to read that the "pressure" used to kill the animals instantly was less than half the "pressure" used in the city for electric lighting.[36]

Although Brown's confident prediction that the New York State Legislature would outlaw high-voltage alternating current in the fall had proved untrue, he was now predicting with similar confidence the recommendation of alternating current for execution by the Medico-Legal Society as a result of the experiments at Edison's laboratory. Brown informed Kennelly that a talk given by Mr. Edison to the members of the committee of the Medico-Legal Society "of course carried great weight." Brown's anticipations now proved valid.[37]

The report received the unanimous approval of the Society when submitted on the occasion of the annual Society banquet, December 12, 1888. It left no question as to the type of current, specifying an alternating one of not less than 300 alternations per second. This current, the report maintained, would ensure death in 15 to 30 seconds; a chair was recommended for the condemned.[38] With the adoption of this report and the attendant publicity, alternating current was publicly associated with death. Brown and direct-current interests had achieved a substantial objective.[39]

Even before the release of the Medico-Legal report, George Westinghouse answered the attack coming from Brown, Peterson, *et al.* On December 13, the *New York Times* printed a letter from Westinghouse challenging the statements and implications of the article on the December 5 experiments at Orange. This rebuttal appeared on the same day as the article on the Medico-Legal report, thus dramatizing the conflict between the contestants in the battle of the currents.

[36] *New York Times*, Dec. 6, 1888.

[37] Ltr. from Harold P. Brown to A. E. Kennelly, Dec. 6, 1888, Edison Archives.

[38] Aware of the significance of the report of the Medico-Legal Society, Brown reprinted it in his *Comparative Danger* (pp. 16–21).

[39] Harland C. Forbes, a vice president of Consolidated Edison Company of New York, stated in a 1954 address before the Newcomen Society (North America) that "they [direct current interests] went so far as to get New York State to specify A. C. generators when the State adopted electrocution as the system of capital punishment." Forbes, *"Con Edison" and Ralph Tapscott*, a publication of the Newcomen Society of North America (Princeton, 1954), p. 15.

In his letter[40] Westinghouse claimed he was obliged to write to correct a possible misconception on the part of the public and to protect vested interests. Not only was the experimenter biased, according to Westinghouse, but the methods used in experimenting with alternating current did not prove its danger to human beings. Brown, the letter stated, was generally known to conduct experiments in the interest of and in the pay of the Edison Electric Light Company – a company driven to such expedients by its alarm at the growth of the competing system.[41] The experiments, furthermore, did not prove the current dangerous because it was applied to animals at the brain and spinal column, points never accidentally exposed by humans. Accidental shock, Westinghouse argued, usually came through the hands. (Edison later agreed that the most effective way to kill with alternating current was through the hands.)

Westinghouse, in conclusion, invited an unbiased reporter to investigate the subject of alternating and direct current. He predicted that alternating would be found less dangerous than direct. The invitation to compare the relative dangers of the two currents was seized upon by Brown in a most sensational fashion: he challenged Westinghouse to a duel or trial by electricity.

Brown challenged Westinghouse to take alternating current while Brown took direct. The voltage would be increased in 50-volt increments until one cried, "enough," and publicly admitted his error.[42] The inventor of the safety air-brake and the man who introduced alternating current to the commercial market did not accept; Brown caustically observed that Westinghouse declined the challenge but was willing to endanger the public. He also thought noteworthy the rumor that Westinghouse preferred to use direct current in his own home.[43]

Whether Brown's challenge caused alternating current to appear dangerous to the public or only made Brown appear ridiculous is debatable, but the over-all effect of the first six months of Brown's campaign gave alternating current a sinister aspect. The current had been used for killing animals; Brown claimed that it had caused

[40] Ltr. from George Westinghouse to the *Times*, Dec. 10, 1888, and printed in the *New York Times*, Dec. 13, 1888.

[41] Westinghouse claimed that the Edison company only reported an annual sale of direct-current apparatus for 44,000 lights while Westinghouse received orders for equipment to supply 48,000 lights during the single month of October, 1888. *Ibid.*

[42] Brown had his challenge printed in several newspapers including the *New York Times*, Dec. 18, 1888. A copy of the letter is in the Edison Archives.

[43] Brown, *Comparative Danger*, p. 27.

numerous accidental deaths of humans;[44] and it was to be used by the state to rid itself of its most dangerous criminals.

Brown's activities for the next year or so were highly organized. Much of his time was spent in making it possible for the new capital punishment law to be carried out – and with Westinghouse equipment. In addition, he not only publicized the dangers of alternating current and the advantages of direct,[45] but also did service as a lobbyist.

An example of Brown's activity as a publicist is a circular letter written by him shortly after the Medico-Legal Society recommended alternating current. This letter was sent to the mayors, members of city governments, insurance men, and principal businessmen in every city and town of over 5,000 inhabitants in the United States.[46] In it he referred to the "executioner's current" and offered printed matter to the addressee of the circular letter, or any mode of assistance that would operate against the encroachment of the deadly menace of alternating current. In return Brown requested information of any accidental deaths from electricity and of any "answers" by his opponents to his arguments. Appealing to their sense of public duty, he asked all citizens to oppose the extension of the "executioner's current" in any city or town where they had influence: to prohibit through legislation danger to the "lives of those dear to you."[47]

Not content to rely alone upon the efforts of the public-spirited citizen, Brown actively lobbied. He tried to restrict alternating current by legislation to a pressure of 300 volts or less, thus divesting this current of its major advantage.[48] Richmond, Virginia, Feb-

[44] Brown, by scanning the newspapers and through correspondence, kept a list of all deaths from electric lighting. Ltr. from Brown to Thomas A. Edison, Oct. 22, 1889, Edison Archives. By 1890 Brown publicly claimed thirty deaths attributable to alternating current. Investigation by Westinghouse agents revealed only one possibly so caused. Passer, *Electrical Manufacturers*, pp. 169–170 and *Electrical Engineer*, Vol. VIII (1889), p. 498.

[45] An outstanding example of Brown's role as a publicist is the booklet, *The Comparative Danger to Life of the Alternating and Continuous Currents* which has been cited above. This booklet was a collection of newspaper articles, speeches, and reports supporting Brown's position. No indication is given of the origins of this publication other than Brown himself, but it undoubtedly involved considerable expenditure.

[46] Ltr. from F. S. Hastings to Thomas A. Edison, Jan. 21, 1889, Edison Archives. This officer of the Edison Electric Light Company asked Brown to send his polemical literature to a list of legislators and officers of the State of Missouri. Ltr. from F. S. Hastings, secretary and treasurer of the Edison Electric Light Company, to Harold Brown, Feb. 19, 1889, and printed in the *New York Sun*, Aug. 25, 1889. See footnote 55 for an evaluation of this source.

[47] In the circular letter Brown put the following phrases in bold-faced type: "produce instant death," "best method of executing condemned criminals," "execution purposes," and "executioner's current." Brown exploited the new execution law and the report of the Medico-Legal Society fully. The circular letter was received and printed by the *Electrical Engineer*, Vol. VIII (1889), p. 74. A copy is also in the Edison Archives.

[48] Brown had hoped to have the high-voltage alternating current outlawed in New York State by the legislature and had also tried to have it removed from New York City by the Board of Electrical Control or the Board of Health as a part of his plan to outlaw the current

ruary 12, 1890, was the occasion of one of Brown's ventures into the field of political lobbying. With Thomas A. Edison, he appeared before a committee of the Virginia Legislature holding hearings on a bill for the "prevention of danger from electric lighting." Both men spoke in favor of limiting, in the interest of public safety, the alternating current to 200 volts.[49]

Despite this testimony the committee reported unfavorably on the bill allowing that the bill could have been inspired by a public fight between two giant corporations and that it was an imposition on the State of Virginia.[50] The proponents of the bill, it was argued, were trying in Virginia what they dared not in New York. Despite this failure, Brown performed his animal experiments in Columbus, Ohio, after a similar bill had been introduced in the Ohio Legislature.[51]

Brown also used his position as an electrical consultant in the contest of the currents. As an expert for the city of Scranton, Pennsylvania, in 1889, he recommended adoption of an ordinance prohibiting alternating current at volts higher than 300.[52] He also arranged for a test to be made by Professor Louis Duncan of Johns Hopkins University to compare the efficiency of alternating and direct-current generators.[53]

In addition to these varied activities, Brown in 1889 had constantly before him the problems arising from his involvement in the plan to carry out the electrocution law. If adverse publicity for alternating current was a prime objective of the direct-current interests in the battle of the currents, then Brown was justified in expending most of his time and energy on this problem.

---

through public authority. The *New York Evening Post*, Nov. [?], 1889, clipping in the Edison Archives.

[49] *Dispatch*, Richmond, Virginia, Feb. 12 and 13, 1890.

[50] Opponents of the bill called the legislators' attention to the fact that only two of the fourteen cities and towns in Virginia using electricity patronized the Edison system.

[51] L. B. Stillwell, "Alternating Current Versus Direct Current," *Electrical Engineering*, Vol. LIII (Fiftieth Anniversary Issue, May, 1934), p. 710.

[52] Ltr. from Harold Brown to Thomas Edison, March 17, 1889, and printed in the *New York Sun*, Aug. 25, 1889.

[53] The test of the Westinghouse alternating-current generator followed upon the published claim by Westinghouse that the alternating-current apparatus operated far more economically than any direct-current system. The Thomson-Houston Electric Company authorized Brown to arrange the test. Ltr. from Harold Brown to Thomas Edison, March 27, 1889, and printed in the *New York Sun*, Aug. 25, 1889. The results of the Johns Hopkins tests were published by Brown in 1890; see H. P. Brown, *A Test of the Efficiency of a Westinghouse Alternating Current Electric Lighting Plant* (New York, 1890). On March 18, 1890, Dr. Louis Duncan and W. F. C. Hasson had a paper read before the American Institute of Electrical Engineers reporting on the efficiency of the alternating-current apparatus presented to Johns Hopkins University by the Westinghouse Electric Company; see, the *Electrical Engineer*, Vol. IX (1890), pp. 158–160. It is possible that these tests came out of a desire on the part of Westinghouse and Johns Hopkins to counteract any suspicion concerning the objectivity of the test planned by Brown.

On January 1, 1889, the new law had become effective and in March the state prison officials authorized Brown to supply, install, and put into operation the apparatus for its execution.[54] In May, 1889, public announcement was made that he planned to use three Westinghouse generators for the purposes of execution; but before these generators could be delivered, Brown had to engage in extremely complicated and delicate negotiations.

Although the Medico-Legal Society in its recommendation to the state had not specified the alternating-current dynamo of a specific manufacturer and there were a number of makes available, Brown was determined to use and discredit the Westinghouse machine. His determination, however, complicated his problem of supplying the dynamos because the Westinghouse company and the customers using and selling its products were as determined that Brown not obtain Westinghouse dynamos.

In order to solve the problem of negotiating the purchase of Westinghouse machines, Brown turned to the two major competitors of Westinghouse: the Thomson-Houston and the Edison Electric Light companies.[55] Brown needed money to pay for the generators inasmuch as the state would not pay him until the machines were proved successful for execution, and he needed to locate available Westinghouse generators. Brown wrote to Thomas A. Edison seek-

[54] *Electrocution Hearing*, Vol. II, pp. 1011, 1014, and 4019. Carlos F. MacDonald of the state asylum for insane criminals at Auburn, New York, suggested to Brown that he be present with a proposal, including costs, at a meeting of the superintendent of state prisons and the wardens of Sing Sing, Auburn, and Dannemora. The purpose of the meeting was to provide the apparatus for carrying out electrocution. Ltr. from MacDonald to Harold Brown, March 19, 1889, and printed in the *New York Sun*, Aug. 25, 1889. Elbridge T. Gerry, head of the commission of the New York State Legislature recommending electricity for capital punishment, made it quite clear that neither his commission nor the law specified the type of apparatus, but that this was entrusted to the superintendent of state prisons. The superintendent of prisons, in turn, delegated skilled practical electricians to provide the apparatus. Elbridge T. Gerry, "Capital Punishment by Electricity," *North American Review*, Vol. CXLIX (1889), p. 325.

[55] These negotiations are described in a series of forty-five letters printed by the *New York Sun* (Aug. 25, 1889), as an exposé of Brown. Hereafter cited as *Sun* letters. Some of the letters were received by Brown and others were copies of letters sent by him. Included was correspondence with Thomas A. Edison (but the original of the letter to Edison is not to be found in the Edison Archives at the Edison Laboratory National Monument in West Orange, New Jersey), the Edison Electric Light Co., and the Thomson-Houston Electric Company. The authenticity of the letters is supported by Brown's own action: he offered $500 reward for information to convict the person who, he alleged, opened his desk and stole a number of papers. He noted that some of these were published in the *New York Sun*; see the *New York Times*, Sept. 5, 1889. Brown intended to present his case to a grand jury in New York City but no further record has been found of the outcome of this activity.

In an editorial about the letters, the *Sun* made the following accusations: "that the state law respecting execution by electricity has been availed of as an expedient whereby certain electrical interests should derive advantage at the expense of a competitor; that there is a conspiracy against the concern known as the Westinghouse Company; that Harold P. Brown is the appointed agent of the conspiracy"; and recommended that his services be dispensed with by the State of New York inasmuch as he was not fit to supply or apply the apparatus for execution. Despite the publication of the letters, Brown continued his well-publicized campaign against alternating current and his work in connection with the supplying of the electrical execution equipment for the state.

ing Edison's approval[56] of the rendering of assistance to Brown by the Edison company and Thomson-Houston.[57]

It is not known whether Edison approved of the "Brown project" but Thomson-Houston, apparently at the instigation of the Edison company, gave Brown considerable assistance, including financial aid. As it evolved, Brown's project involved not only the supplying of three machines to the state prisons, but also the prior use of one of these machines for the series of efficiency tests at Johns Hopkins University by Professor Louis Duncan.[58]

The Thomson-Houston Electric Company located three Westinghouse generators for Brown. Thomson-Houston sold alternating-current equipment, and several electric-light companies with which it had business relations owned Westinghouse generators. Through a middleman – a Boston dealer in used electrical equipment – Thomson-Houston arranged for the old Westinghouse generator to be replaced by new equipment. C. A. Coffin, then treasurer of Thomson-Houston, promised to reimburse Brown for all he paid in excess of $1,200 for each dynamo and $1,000 on account of expenses attending the Johns Hopkins test.

Not only were these transactions, primarily beneficial to the Edison company, negotiated by Thomson-Houston through a middleman (to protect the parties involved), but elaborate precautions were taken to obscure the identity of the generator being shipped to the prison at Auburn, as Brown believed that the Westinghouse people would cripple the dynamo through the liberal use of money if the shipment could be identified.

On May 13, the day after Brown wrote urging elaborate precautions in shipping the dynamo to the Auburn prison, Judge Childs sentenced William Kemmler, alias John Hart, to be executed by electrocution at the Auburn prison. Brown, faced by the immediate prospect of seeing his project culminate in death, sought

[56] Brown assured Edison that his (Brown's) scheme would result in the cutting off of the overhead alternating-current circuits in the state and help "all legitimate electrical enterprises." Ltr. from Brown to Edison, March 27, 1889, Sun letters. On Oct. 15, 1889, the Chief Inspector of the Health Department of the City of New York did recommend to the Sanitary Superintendent – as a result of "leakage tests" run on alternating-current circuits in the city – the prohibition of high voltage upon wires in the city. Enclosure in a letter from Brown to Edison, Nov. 7, 1889, Edison Archives.

[57] The Edison and the Thomson-Houston companies probably cooperated because not only did they have opposition to Westinghouse in common, but also because, even this early, a merger between the two companies was being considered. According to Harold Passer, all available evidence indicates that the consolidation between Thomson-Houston and Edison which was to create General Electric in 1892 was under consideration as early as 1889. *Electrical Manufacturers*, p. 321. The Thomson-Houston company was especially well suited to render Brown assistance because it was not associated in the public mind with opposition to Westinghouse and alternating current as was the Edison Electric Light Company.

[58] See above, footnote 53.

justification in referring to Kemmler in a letter to Coffin as "a brute who chopped a woman to bits with an axe." [59]

On June 7, the prison at Auburn acknowledged the arrival of the generator that was destined to be the instrument for the first electrocution. In August, Brown and an assistant, "a Mr. Davis," [60] visited the prison to inspect the generator, and other apparatus, after it had been put in place. A reporter on the scene asked Brown if there were any substance to the claims that the apparatus would not fulfill its function properly. Brown described such talk as "rot" and predicted that the apparatus would "knock the life out" of Kemmler in short order. After referring to fifteen men killed accidentally by Westinghouse generators, Brown reminded the reporter that this was the "machine to be used in the execution of Kemmler." [61]

However, before a Westinghouse generator would "knock" the life out of Kemmler, the State of New York had to defend death by electricity. Under the state's constitution, cruel and unusual punishments were forbidden, and attorneys for Kemmler offered in the summer of 1889 to prove that electrocution was therefore unconstitutional. A writ of habeas corpus was issued on behalf of Kemmler, and Judge S. Edwin Day, Cayuga County, New York, authorized a referee to take testimony in support of, and in denial of, the contention.

These hearings proved of more than ordinary interest as leading figures in the electrical world appeared to give testimony. Among those heard were three future presidents of the American Institute of Electrical Engineers (Franklin L. Pope, Arthur E. Kennelly, Schuyler S. Wheeler),[62] and Thomas Edison. All, with the exception of Pope, appeared on behalf of the state. In addition to the electrical experts, physicians, and persons having been shocked

[59] Ltr. from Harold Brown to C. A. Coffin, May 13, 1889, *Sun* letters. As noted, above, the account of Brown's activities in obtaining the generators is from this source (*Sun* letters).

[60] *New York Times*, Aug. 6, 1889. State Superintendent of Prisons, Austin Lathrop, delegated the building of the first electric chair to Edwin F. Davis, an electrician. Robert G. Elliott (with Albert R. Beatty), *Agent of Death* (New York, 1940), pp. 22–23 and 29. Subsequent to the first electrocution at Auburn, Davis was recommended by the Edison people when the authorities at Clinton Prison, New York, sought their recommendation for an electrician to supervise an electrocution. A memo in the "electrocution file" at the Edison Archives (no date). According to Nikola Tesla (1856–1943), one of the prominent pioneer inventors for the electrical industry, he and another engineer designed the prototype of the electric chair for commercial use, but then the opponents of alternating current had the chair adopted for capital punishment. The *New York World*, Nov. 17, 1929.

[61] *New York Times*, Aug. 6, 1889.

[62] Franklin L. Pope, the second president of the A. I. E. E., was employed by the Westinghouse company at the time of the hearing; Schuyler S. Wheeler was the electrical expert for the New York Board of Electrical Control; and Kennelly was president of the A. I. E. E. from 1898–1900.

(electrically), either accidentally or by lightning, gave a large share of the testimony.

In the course of the trial, W. Bourke Cockran, Kemmler's attorney who demonstrated considerable skill in examining witnesses in such a highly technical field as that of electricity, repeatedly attempted to demonstrate that those recommending electrocution and those designing and providing the apparatus to carry out the sentence were insufficiently informed to guarantee that the punishment would not prove cruel and unusual.[63] He argued that the experiments with animals did not prove that a similar result would occur with a human being, and that the measurements taken during these experiments and upon which the conditions of the first electrocution were to be based, could not be proved accurate.[64]

Brown made an early appearance as a witness. It was brought out that he was not a member of the Institute of Electrical Engineers and that he had had no formal education in electrical science. In defending his competence Brown emphasized his thirteen years of practical experience as an electrician which included three years in Chicago in charge of Edison's electric pen, and selling and adjusting telephone and electro-medical apparatus; five years with the Brush Electric Company[65] in charge of its northwestern business as salesman and electrical expert; and five years in business for himself promoting his many patents and serving as a consultant.[66] Bourke Cockran raised the question whether this background qualified an individual to offer expert advice to the state on capital punishment by electricity.

The counsel for Kemmler only occasionally related the current controversy and the new execution law, but when examining Brown he inquired into the association between Brown and Edison. According to Brown, the association was purely a personal one based upon the favors that Edison had done for him when he was conducting the experiments on animals.

[63] The hearing and subsequent legal developments are described in *Electrocution Hearing*. See above, footnote 18.

[64] At this time the theory of alternating currents was not fully understood and methods for making power measurements had not been perfected. Malcolm MacLaren, *The Rise of the Electrical Industry During the Nineteenth Century* (Princeton, 1943), pp. 146–147. Therefore, those testifying on behalf of the state found it impossible to satisfy completely the objections of Bourke Cockran.

[65] The Brush Electric Company pioneered the development of arc-lighting in the United States. Charles Francis Brush, who held a bachelor's degree in chemistry from the University of Michigan, began experimenting with electricity in the 1870's. His arc-lighting company expanded rapidly during the period when Brown was employed.

[66] Brown's letterhead, after he became self-employed, carried the following description: "Designer of Apparatus for Special Purposes, Contractor for Arc and Incandescent Electric Lights and Steam-Power, City Street Lights Tested and Compared with Contract Requirements, Complete Plants Erected for City Lighting. Harold P. Brown, Electrical Engineer, 201 West 54th St., New York." Letter from Brown for general circulation, Edison Archives, no date [Jan., 1889?].

When Edison gave testimony he also denied any business connection between himself and Brown, or between Brown and the Edison company. Although acknowledging the experiments that Brown had conducted at the Orange laboratory, Edison testified that he saw only one or two of Brown's experiments. He denied writing any letters recommending Brown as a person who could conduct executions with dispatch.[67]

Bourke Cockran attempted to demonstrate that Edison could not be considered an expert in areas where he had conducted no experiments; Edison had never killed a man with electricity. Under examination Edison could not be argued into asserting as fact any information that he had not seen proved to his own satisfaction by experiment, and he revealed a talent for giving an incisive statement to any technical question put to him. Although he could not make a statement of fact, Edison offered a clear opinion that 1,000 volts of alternating current properly applied would bring an instantaneous and painless death.[68]

Kemmler's attorney created doubts that the death would be quick and painless – Edison's opinion notwithstanding – and also raised the question whether the electrocution would not be cruel because of possible mutilation of the victim's body. Such a contingency, in the opinion of Bourke Cockran, might well result if too much current were administered for too long a time. Edison admitted that Kemmler might be "mummified" if it became necessary to apply voltage in its most wicked and aggravating form for five or six minutes from the Westinghouse generator;[69] Bourke Cockran would have preferred Edison to say "carbonized."

Edison and Brown were expecting the question of mutilation, or

[67] Thomas A. Edison testimony, *Electrocution Hearings*, Vol. II, pp. 648–650. Although Edison denied close involvement with Harold Brown, he was interested enough in winning public support for the direct current in the current controversy to write an article for the *North American Review*, Vol. CXLIX (1889), pp. 625–634, in which he characterized alternating current as unnecessary and unalterably dangerous. Edison also opposed the utilization of rights to an European alternating-current system acquired by the Edison company in 1886 and as noted above he took part in the hearings before the legislature committee of the State of Virginia in February, 1890. Although Edison did not supervise the various experiments on animals conducted at his laboratory, or even plan for them, his interest in the current controversy is also attested to by the part he instructed – or at least allowed – his assistant, Kennelly, to play in conjunction with Brown, Dr. Peterson, and at the request of F. S. Hastings of the Edison Electric Light Company in preparing and carrying out the animal experiments. Nor was George Westinghouse inactive in this phase in the "battle of the currents." In addition to his letter to New York newspapers, he wrote a reply to the Edison article in the next issue of the *North American Review* and in another article in the same periodical, "Sir Wm. Thomson and Electric Lighting," Vol. CL (1890), pp. 321–329, he counterattacked in the campaign to outlaw "dangerous" currents by recommending that only those currents be allowed in dwelling places that were insulated from the main electric lines by transformers. Such a regulation would have reduced the fire hazard, according to Westinghouse.

[68] Thomas A. Edison testimony, *Electrocution Hearing*, Vol. II, p. 636.

[69] *Ibid.*, p. 645.

burning, to be raised. Kennelly, upon the suggestion of Edison, had written Brown at the beginning of the hearings warning that this was the only argument of weight that could be brought against "electrocide" on the score of cruel punishment.[70]

During the course of his testimony, Kennelly brought before the referee the results of experiments on Edison employees. These findings were intended to refute the "mutilation" argument by an accurate determination of the electrical resistance of the human body and thus the amount of current necessary to traverse it. Despite these experiments Kennelly admitted that he could state no general law governing the application of electricity to animals and much less to man.[71]

The referee, who had begun taking testimony on July 8, 1889, submitted it to Judge Day on September 11. On October 12, Judge Day found that, while the defendant had demonstrated the question, he did not carry proof of cruel and unusual punishment and therefore the constitutionality of the legislative act was presumed.[72] Protracted litigation followed upon this decision, but Kemmler's attorneys could not save him from the sentence despite appeals and applications culminating in a hearing before the Supreme Court of the United States. Kemmler stood sentenced to die by electricity in August, 1890.

As this date approached, those who had advocated the first electrocution probably had inner qualms. Not only did Kemmler's legal defense raise doubts as to the expertness of those "experimenting" with death by electricity, but newspapers and journals had also carried critical articles and editorials. The *New York Evening Post*, which had supported electrocution, had reversed its stand when pictures were released of such "terror-giving paraphernalia" as the electric chair.[73] The *Scientific American* had commented that a perfect and certain method for the "electrical slaying of human beings has not yet been evolved."[74] Park Benjamin, the author of

[70] Ltr. from A. E. Kennelly to Harold Brown, June 29, 1889, *Sun* letters.

[71] A. E. Kennelly testimony, *Electrocution Hearing*, Vol. II, pp. 655–714, *passim*. In view of Kennelly's prominence, his role in the Brown episode deserves comment. Kennelly, instructed by Edison to assist Brown in the series of animal experiments, maintained that he did not help Brown write the polemical literature (Brown's, *Comparative Danger*) which presented the results of the experiments. On the other hand, Kennelly did play a leading part in carrying out the various animal experiments for the Medico-Legal Society. Dr. Frederick Peterson, chairman of the committee on electrical execution, carried on a correspondence with him in regard to these experiments. Ltr.s from Peterson to Kennelly, Dec. 10 and 26, 1888, Edison Archives.

[72] *Electrocution Hearing*, Vol. II, p. 1,067.

[73] *New York Evening Post*, May 14, 1889, and reprinted in the *Electrical Engineer*, Vol. VIII (1889), p. 247. (The *Evening Post* had expected the victim to be dispatched by the simple touch of a wire or a knob.)

[74] The *Scientific American*, Vol. LX (1889), p. 2.

A History of the Intellectual Rise of Electricity (New York, 1895), wrote of his displeasure to the *New York Herald*, commenting that the "clap-trap" contrivance at Auburn was to be used for the most solemn act that society could perform. He also took exception to the prostitution of this act "to the purpose of a business advertisement." [75]

Representatives of the electrical industry also attacked Brown and electrocution. In an address before the convention of the National Electric Light Association on August 7, 1889, a speaker told the members that "punishment of death by means of the electrical current is so cruel that legislators ought not to adopt it, so cruel that the legislators of New York ought to repeal their law, and so cruel that the courts of New York ought to pronounce the statute unconstitutional." [76]

In another address Dr. Otto A. Moses of 131 East 73rd Street, New York City, described electrocution as the most barbarous form of killing that could be devised. He noted the change in attitude among members of the electrical profession after the full import of the New York State law was realized – from disinterest to aroused protest. Probably referring to Harold Brown, the speaker declared, "we saw the precise methods, the cruel calculation, the persistence of certain individuals – I might say one individual – constantly bringing before the public the fact that the law had to be executed and then . . . [bringing] . . . further opprobrium . . . upon one branch of our beloved art and science. . . ." [77]

Seeing the public's fear of electricity growing and a civilizing agent being used in such a barbarous way, Moses offered a resolution calling for the repeal of the law by the New York State Legislature.[78] After further condemnation of an "individual" who gratified his "personal malice in pitting one system of . . . lighting against another," the resolution was carried.[79] A committee was to be named to present the resolution to the governor.

Even those who had assisted Brown had doubts. C. A. Coffin wrote Brown that experts at Thomson-Houston did not believe 1,000

[75] The *Electrical Engineer*, Vol. VIII (1889), p. 372.

[76] *Proceedings of the National Electric Light Association at its Tenth Convention* (Semi-Annual Meeting held in the Casino at Niagara Falls, N .Y., Aug. 6, 7, and 8, 1889), Vol. VII (New York, 1890), p. 135. Hereafter cited as *Proceedings of N. E. L. A.*

[77] *Proceedings of N. E. L. A.*, p. 136.

[78] Not only had the public's fear of alternating current been stimulated, but direct current earlier, and street-railway electrification simultaneously, had been subjected to attack – if to a lesser degree – as menaces to public safety. Exemplifying the general public's interest was an article in a popular periodical written to lessen the public's exaggerated fear of electricity and make it aware of the few real dangers that did exist (John Trowbridge, "Dangers of Electricity," *Atlantic Monthly*, Vol. LXV [1890], pp. 413–418).

[79] *Proceedings of N. E. L. A.*, pp. 157–158.

volts of alternating current necessarily fatal to human life. This current, Coffin continued, could not be relied upon to kill any man or animal immediately, and he recommended the use of a higher voltage.[80] On the other hand, an observer at tests of the apparatus to be used commented that providing such elaborate machinery to kill a man was "like putting up a saw-mill to rip a match."[81]

Brown admitted no doubts. He claimed – in an article given wide circulation by publication in the *North American Review* – that 1,000 volts would kill the criminal instantly and vindicate "the majesty of the law." He was not experimenting with human life, Brown observed, when using a generator that had demonstrated its effectiveness by killing many innocent men who had accidentally made contact with its "deadly wires."[82]

Although Brown professed no uneasiness about the effectiveness of alternating current to kill quickly and painlessly, there is an indication of provisions made by opponents of alternating current to avoid the challenging of this view by those who were actually to witness the execution. Three months before Kemmler died, the *Weekly Sentinel* of Port Arthur, Lake Superior, Ontario, carried an account of his electrocution.[83]

Under a headline, "Painless Death of Murderer Kemmler," the article reported the infliction of the sentence with no "hitch" whatsoever, Kemmler, according to the *Sentinel's* source, repeated the Lord's Prayer and received over 7,000 volts as he came to the words, "for thine is the kingdom, the power and the glory." Kemmler's stern features relaxed, he gave a visible shudder, and that was all. This account – "special to the *Sentinel*" – concluded with the observation that the days of the scaffold were almost at an end; a safe, quick, and reliable mode of execution had been demonstrated; and the most modern and painless way proved.[84]

The official report of the first legal electrocution gave August 6, 1890, as the date of Kemmler's death. He died before twenty-five official witnesses, including a large number of doctors and prison officials. Kemmler, who had wished the world good luck and asked that all adjustments be precise, met a sudden and painless death –

[80] Ltr. from C. A. Coffin to Harold Brown, May 22, 1889, Sun letters.
[81] *Electrical Engineer*, Vol. IX (1890), p. 2.
[82] Harold P. Brown, "The New Instrument of Execution," *North American Review*, Vol. CXLIX (1889), p. 587.
[83] The *Weekly Sentinel*, May 2, 1890.
[84] Article from the *Weekly Sentinel* was reprinted in the *Electrical Engineer*, Vol. IX (1890), p. 350.

according to the official report, written by Carlos F. MacDonald.[85]

There had been a mishap, however. After the current had been applied for 17 seconds, the attending physician pronounced Kemmler dead, but within half a minute the body gave a series of slight movements, and two interminable minutes passed before current could be applied again. The second contact was held for 70 seconds. Burning, or desiccation, resulted from the second application.

The delay between applications, the nature of the burning, the character of the series of slight movements gave rise to conflicting interpretation among witnesses. The official account maintained that the first execution with electricity would be considered a success and the law a step in the direction of higher civilization.[86]

On the other hand, the *Utica Globe* declared that the men who witnessed the horrible scene in the death chamber of the Auburn prison never wished to be present at another such exhibition. The *Globe* reported Dr. Spitzka, the attending physician, as characterizing the "experiment" a failure and calling for repeal of the law.[87] A Dr. B. W. Richardson, writing in the *Scientific American*, felt that capital murder had never been more thoroughly discredited, and that a rank immorality had been committed in the name of science.[88] The *Telegraphic Journal and Electrical Review* printed an article on Kemmler's execution "as seen by an electrician" and described the effect of the electrocution on the witnesses as unbearable.[89] The critics, however, agreed that Kemmler, if not dead, was senseless after the first application.

When interviewed, Edison reiterated his opinion that alternating current when properly applied would be the quickest and least painful method of capital punishment. In the case of Kemmler, Edison said no difficulty would have been encountered if the contacts had been applied at the hands. Experience, drawn from studying the deaths of thirty men around New York, had taught him that the charge killed when it entered through the hands. He doubted that Kemmler had received the full charge for the time stated,

[85] State of New York, *Report of Carlos F. MacDonald, M. D., on the Execution by Electricity of William Kemmler, alias John Hart: Presented to the Governor, September 20, 1890* (Albany, 1890), pp. 7–8. Hereafter cited as, *MacDonald Report*.

[86] *MacDonald Report*, p. 14.

[87] The *Utica Globe* quoted from *Correction*, Aug., 1940, in Harry Elmer Barnes and Negley K. Teeters, *New Horizons in Criminology* (New York, 1945), p. 419.

[88] *Scientific American*, Vol. LXIII (1890), p. 200.

[89] Charles R. Huntley, "Kemmler's Execution as Seen by an Electrician," *Telegraphic Journal and Electrical Review*, Vol. XXVII (1890), pp. 278–279. Hereafter cited as *Telegraphic Journal*. Leo W. Sheridan, in his account of the career of Robert Elliott (who came to be known as America's foremost executioner) characterizes the Kemmler execution as a "horribly bungled job." *I killed for the Law* (New York, 1938), p. 15. Sheridan's description of the execution was drawn from newspaper reports and seldom agrees with the official report.

for he would have been mummified or carbonized. The next death, he predicted, would be instant and without the scene at Auburn.[90]

The equanimity displayed by Edison was shared by others. One electrical journal noted with irony the compassion shown toward Kemmler by those papers controlled by the alternating-current party.[91] Another commentator repeated the rumor that the Westinghouse company and some of its adherents had spent thousands of dollars to obstruct the operation of the new law, and had purposely emphasized the sickening details of the electrocution. It was recommended that these complainants bring their own electrical system off the street, into the prison, and simply let the wires touch the prisoner's hands.[92]

Despite conflicting opinions as to the efficacy of electricity in its first test as a means of execution, the State of New York retained the system. In the belief that some injustice might have been done to a particular electrical firm by the use of a commercial generator, the official report of Kemmler's execution did recommend that a generator be especially constructed for future use.[93] An unofficial recommendation suggested the association of Brown's name with electrical execution in the same way that Dr. Ramon Guillotin's had become associated with his device.[94]

Brown's name, however, soon disappeared from the nation's newspapers and periodicals, and there is good reason to doubt that his attempt to associate alternating current with death had a noticeable effect upon the outcome of the battle of the currents. Statistics show a steady and rapid increase in the number of central stations using the Westinghouse system of alternating current during the period when Brown was most active, 1888–1890.[95] Nor did Brown's attempt to discredit alternating current prevent this current from eventually emerging victorious from the contest of the currents.[96]

[90] "Mr. Edison and the Kemmler Execution," *Telegraphic Journal,* Vol. XXVII (1890), p. 280.

[91] Editorial comment, *Telegraphic Journal,* Vol. XXVII (1890), p. 260.

[92] *Scientific American* quoted in, *Telegraphic Journal,* Vol. XXVII (1890), pp. 230–231.

[93] *MacDonald Report,* p. 19.

[94] Public sentiment was not always sympathetic to Brown's point of view. A popular speaker in New York alluded to Brown as "a lizard-blooded scientific promoter of murder, a creature to be forever loathed." *New York Times,* Aug. 12, 1889.

[95] Tables in Passer, *Electrical Manufacturers,* pp. 149–150.

[96] By 1917 more than 95 per cent of the electrical energy generated annually in the United States was alternating current. T. Commerford Martin, *Forty Years of Edison Service, 1882–1922* (New York, 1922), p. 89.

By Giulio Pontecorvo
ASSISTANT PROFESSOR OF ECONOMICS
AT BOWDOIN COLLEGE

Investment Banking and Security Speculation in the Late 1920's*

The stock market boom and bust of the late 1920's has been closely associated by scholars and public alike with the great changes in American life that followed closely thereafter. Actually, the interrelationship is far from clear, and a better understanding of the capital market is needed. Historical evidence points to the absence of effective market regulation and to the violation of accepted norms of monetary policy, but the only clear-cut causal connection between levels of economic activity and the stock boom lies in the effect of security inflation on the psychological climate of the business community.

Introduction

The performance of the American economy in the 1920's has been analyzed by many observers, and while our over-all picture of the decade is reasonably clear, in several important areas we have, as yet, only limited information. This article attempts to throw some light on one of these areas by analyzing the capital market in the later part of the decade.

More specifically, we suggest for examination the following assertions:

(1) During the 1920's there was no effective regulation of the American capital market.

(2) The pattern of new security issues, both stocks and bonds, indicates that money capital was made available to a wide variety of business borrowers on progressively easier terms prior to the downturn in business activity in 1929. After the panic in the fall of 1929 only firms with the very highest credit ratings could obtain funds in the capital market. This behavior in the capital market was contrary to Federal Reserve policy.

* The author wishes to express his indebtedness for many helpful suggestions to Professors Darling and Storer of Bowdoin College, Professors R. A. Gordon and F. T. Morrissey of the University of California, Professor K. Ainsworth of Allegheny College, and to the Faculty Committee on Research of the University of Colorado.

(3) While the pattern of new security issues was not "acceptable" by orthodox standards of monetary policy, the volume of new security issues did not as yet have any observable quantitative effects on either aggregate consumption or investment in the United States.

We will begin our analysis by examination of the various possible sources of regulation of the capital market: i.e., the Federal Reserve System, institutional lenders, and the investment banking business. We will then consider the pattern of financing, primarily the value and number of security issues in the late 1920's. And finally, we will look into the impact of the capital market on general business conditions in the United States.

Regulatory Forces and Their Limitations

The literature on the role of the Federal Reserve System and on the money market in the 1920's is voluminous. Here we need only to reassert the basic findings of that literature.

The primary motivation behind the formation of the Federal Reserve System was to provide a solution to the monetary problems that had plagued the country during the latter half of the nineteenth and the early twentieth centuries. The transition from the intent of the founders to the Federal Reserve System of today was a long and often painful one, and the performance of the Federal Reserve System in the 1920's is best explained as part of this growth process.

The prosperity of the 1920's, or to state it slightly differently, the absence of any major monetary crisis from 1921 to 1927, permitted the Board of Governors gradually to consolidate its position within the Federal Reserve System and to begin to work out its broader policy objectives.[1] These processes were far from complete when, after 1927, the Board was forced to come to grips with the problems of inflation in the stock market. The inflation in stock prices and the number of new security issues clearly raised the question of whether or not a particular sphere of private interest could or should be regulated in the public interest by the Federal Reserve System. It cannot be said that the Board showed real knowledge of the implications of the stock boom or that the steps

[1] We may roughly generalize and say that, in the 1920's, the Board of Governors had as its basic aims restoration and maintenance of the international Gold Standard and the stability of the domestic price level.

they took to end it were the decisive influences that brought stock prices down. But it is clear that by 1929 the Board of Governors had moved sufficiently far from a purely laissez-faire interpretation of their position that they were prepared to act during the crisis to the best of their ability to regulate the level of security prices and therefore indirectly the amount and kind of new security issues. However, while the Federal Reserve Board was moving in the direction of increased monetary regulation in the public interest, the deliberateness and the uncertainty of their actions meant that the Board did not during the 1920's have any significant restraining influence on the behavior of the capital market.

It might have been expected that some degree of regulation would have been imposed from the supply side of the capital market. However, in the decade of the 1920's there was no array of powerful institutional lenders such as one finds in today's market.[2] In the 1920's funds were supplied to the market primarily by a public which had a rising level of income and a historical interest in security speculation. Investment companies of various sorts became important late in the decade but, as we shall see, they tended to resemble and behave more like holding companies than modern investment companies. The close ties between some of these investment companies and speculative interests meant that by their policies they contributed more to market instability than to stability.[3]

The conclusion one may draw from these preliminary remarks is that the American capital market in the 1920's was still independent of any significant constraints on freedom of action that might have been imposed by the public at large or by the suppliers of capital. This freedom had been a characteristic of the American market since its inception early in the nineteenth century.[4]

Let us turn now to the question of self-regulation of the capital

[2] For a résumé of the position of institutional investors during the late 1920's and early 1930's, see *The Security Markets* (New York: Twentieth Century Fund, 1935), Chap. VI.

[3] It should be noted that the management of the New York Stock Exchange worked to improve the level of financial practices throughout the decade.

[4] It was highly unusual for the capital market of a modern nation to be virtually exclusively oriented toward private interests. In fact, in the 1790's it was the fiscal problems of the young American government that had been responsible for creating the financial business that led to the original organization of a stock market in New York. But the peculiarities of American development in the nineteenth century reduced the necessity for government financial activity, substituting a combination of state and local government and private financial transactions. In the 1860's, briefly in the 1890's, and during the First World War, the fiscal needs of the state suddenly rose to dominate the financial markets, but in each case the need was transitory and the influence of the government was subsequently withdrawn from the market place.

market by investment bankers. It was during the decade of the 1890's that investment banking reached maturity. From the end of the depression of the nineties until World War I the investment banking business was a highly concentrated oligopoly. The leadership in the business was competent, in its own terms, and aggressive. Entry was difficult primarily because money capital was scarce and also because of the nature of the business. Prestige and "the right connections" have always been an important part of the business, and these factors constituted a formidable barrier to entry.[5]

However, the structure created by the elder Morgan and his contemporaries was not stable. The most important contributing factor to the instability in investment banking was the rate of growth in the American economy. The increased capital needs of a rapidly growing and diversifying economy could only have been met by a small number of investment bankers with the greatest difficulty. And certainly these needs were not met by a group of investment banking firms that tended in time to lose both their aggressiveness and adaptability. The situation was further aggravated by the rapid growth in the supply of money capital as a result of the First World War and the impact of Federal Reserve policy on the supply of money during the 1920's.

The rate of growth of the American economy had two effects on investment banking. One was to increase the size and financial strength of business units, which reduced their dependence on investment bankers. While the impact of the tendency for firms to reach giant size has been most heavily felt in the 1940's and 1950's, it was also a factor in the 1920's.[6]

The other effect of economic growth was to create new opportunities for financing. Investment banking was and is a service industry. Historically, investment banking firms have had a tendency to specialize in the financial problems of specific industries. As the economy grew, the relative importance of various industries changed, and this in turn was, in part at least, reflected in the fortunes of those investment banking houses closely associated with specific industries. The failure of the leading firms to fill the

[5] "In consequence of such policies and tactics, the great investment bankers, Morgan, Baker, Stillman, Kuhn, Loeb and Company, Lee Higginson and Company, and Kidder, Peabody and Company controlled large transactions almost to the complete exclusion of outsiders, i.e., minor houses which they did not approve. Between about 1900 and 1910 there was only one issue exceeding $10,000,000 that was floated without their participation, and even that (an issue of $13,500,000) had the Morgan blessing." Fritz Redlich, *The Molding of American Banking* (New York, 1951), Part II, p. 380.

[6] See Lauchlin Currie, "The Decline of the Commercial Loan," *Quarterly Journal of Economics*, Aug., 1931.

financial needs of the rising industries created opportunities for the entry of new investment banking firms.[7]

A final factor that contributed to the instability in the structure of investment banking was the development of a wide market for securities, i.e., the upsurge of security retailing in the 1920's. It would appear that there were economies of scale in security retailing. These economies lay in increased specialization and in the advantage a connection between investment banking and commercial banking gave in the distribution process. This observation is based on the tendency for commercial banks to form investment banking affiliates, and for these affiliates to develop into the big volume houses in the 1920's. These two sources of entry, i.e., to finance new industries and to participate in a large number of issues which were widely distributed, were a basic source of instability in the industry.[8]

While the investment banking business of the 1920's was still a concentrated oligopoly, the effect of entry was to reduce the relative importance and the leadership role of the original firms. Furthermore, the industry developed a large competitive fringe. This fringe of highly competitive firms had a considerable effect on the behavior of the industry.

The over-all impact of these changes was the elimination of any internal controls that may have been present in the earlier period. The instability in the structure created by the rise of new firms was a factor in the security inflation that followed. In the face of entry by new firms, the older houses tended to differentiate themselves by emphasizing their prestige, by avoiding competition, and by their relatively more conservative practices. (This was especially true of J. P. Morgan and Kuhn, Loeb and Company.) Thereby these older houses abandoned the potential leadership which they might have exercised over their competitors.[9]

Mr. Kahn. Well, if you want a categorical answer, Mr. Pecora, I can only say it is always the other way around; has been with us for 50 years perhaps, or certainly for the last 30 or 40 years. It is not we that go to the corporations

[7] Redlich, *op. cit.*, pp. 380 ff.

[8] A discussion of entry into investment banking should consider not only the number of firms but the relationship of various firms to the generation of new security issues. Therefore the evidence presented below that about 1,000 firms participated in security issues in 1929 is only partly indicative of the importance of the entry of new firms. On a more qualitative basis the extent of the entry that took place from just before the First World War to 1929 is indicated by the fact that of the 17 firms named as defendants in the antitrust suit in 1949 some 7 firms or their predecessor firms began operations after 1910. Of even greater importance was the rate of growth in the firms which entered after 1910.

[9] Hearings before the Committee on Banking and Currency, U. S. Senate, 73d Cong., 1st Sess. on S. Res. 84, Part 3, p. 968. For a similar statement of attitude and purpose, see *op. cit.*, Testimony of J. P. Morgan, Part 1, pp. 4, 5 and 6.

and ask them to do business with us. We hope that we have established a reputation which is our show window, which attracts customers. We hope that our trade mark, our sponsorship is recognized of some value to the corporation. We do not go after them. That may be conceited, but we do not. We would rather do less business. We do not go after them.

We may carry the analysis a step further and suggest that in the 1920's, within the concentrated sector of the industry, there were two groups of firms. The oldest firms with the greatest prestige and tradition of financial leadership were generally the most conservative; conservative in terms of not actively seeking new business on a competitive basis and also in maintaining relatively higher standards of conduct throughout the period.[10]

A second group of firms was aggressively engaged in expansion of their business.[11] This differentiation among investment banking firms is best illustrated by examination of the types of issues they sponsored.

A certain portion of the new issues in the late 1920's was created in order to provide the money capital necessary to protect existing properties and vested interests.[12] Here, the idea of control of real property was the basic consideration. Using the concept of control of real property as our criterion of differentiation between types of new issues we may establish at least one other alternative type of security issue. In this second group of issues there was no motivation toward control of real property or protection of a vested interest. This second group consisted of the issuance and sale to American investors of foreign government bonds that the underwriting American investment banking house knew or strongly suspected to be worthless or extremely risky. Control of real property was not a part of this latter type of issue; it was just a question of having something attractive to sell in a sellers market.

Issues of the first type, i.e., those that were part of an attempt to affect or protect the structure of an industry, were clearly in the historical image or pattern of behavior in the American capital

[10] Because of the diverse and changing nature of investment banking firms, this categorization is only an approximation. For example, J. P. Morgan did participate in the formation of Standard Brands in 1929. For a comment on the absence of "glaring abuses" in the way the Morgan firm conducted itself during this period, see F. Pecora, *Wall Street Under Oath* (New York, 1939), p. 5 ff.

[11] Typical representatives of this group of "new firms" of the 20's would be Dillon Read and the National City Company. Dillon, Read & Company was formed as a joint stock association in New York in 1922. This firm had roots much further back but it only grew to national importance in the 1920's. The National City Company was formed in 1911. Charles E. Mitchell became president in 1916.

[12] This discussion of new issues applies to those issues which were not aimed primarily at providing funds for real capital additions for domestic corporations; i.e., issues for financial purposes to consolidate firms or modify the structure of industries.

market.[13] The following is an example of this type of issue. In the late 1920's, the managements of the principal eastern railroads were disturbed by the possibility of a reorganization of existing railroad properties. (The reorganization was to be instituted by the Van Sweringen Brothers assisted by J. P. Morgan and Company.)[14] This threat caused concern among the other roads and the Pennsylvania Railroad, assisted by the investment banking house of Kuhn, Loeb, took steps to protect its position.[15]

The struggle for the control of railroad properties was directly responsible for the important Allegheny and Pennroad security issues in 1929. These security issues were just a part of the power struggle of private interests for control of important transportation facilities. They grew out of the traditional use by the investment banker of the capital market as the source of funds to be employed in industrial reorganization. Issues for this purpose had appeared in the market for at least the previous fifty years, whenever general business conditions and the expectations of security buyers made their sale possible.

The intensity of the sellers market in the late 1920's is better revealed, however, by the other group of new issues, i.e., those void of any attempt at control of property, of which certain Peruvian bonds sold by the National City Company will serve as an example. Throughout the decade, the National City Company had been interested in the possibilities of South American bonds. Unfortunately, in the case of Peru, the reports from their agents on economic and political conditions in that country were so discouraging that in the first half of the decade the matter was not pursued. However, by 1927, in spite of continued adverse reports on Peru, the National City Company was willing to proceed with a $15,000,000 loan.[16]

Mr. Pecora. Do you find any mention in it (the prospectus) whatsoever of the bad credit record of Peru which is embodied in the information I have read into the record from your files?

Mr. Baker. I should have to read this over, Mr. Pecora (after perusing docu-

[13] We are not directly concerned here with the problem of the investing public, but rather with the kind of issues put forward by investment banking houses and the insight the various kinds of issues offered give us about the motivation and orientation of the issuing house.

[14] See the testimony by Mr. O. B. Van Sweringen, Hearings, *op. cit.*, Part 2, pp. 563 ff., especially his statement of the intent and purpose of the *Allegheny Corporation* on pages 564–569.

[15] See testimony of Otto Kahn, Hearings, *op. cit.*, p. 1,246.

[16] Stock Exchange Practices, Report of the Committee on Banking and Currency, Senate Report No. 1455, 73d Cong., 2d Sess., 1934, III, p. 128.

ment). No; I do not see anything. It is a secured loan. I do not see any statements in there.

Mr. Pecora. No statement or information was given to the American investing public in your circular corresponding to the information that your company possessed in writing among its files concerning the bad debt record of Peru and its being a bad moral and political risk?

Mr. Baker. No, sir.

In late December, 1927, a second $50,000,000 issue was offered to the public, and in October, 1928, a third issue of $25,000,000 was brought out. The National City Company persisted in these issues even though its foreign advisors continued to warn them of dangers in all phases of economic and political activity in Peru.[17]

The questionable circumstances surrounding these particular bond issues certainly did not represent any radical innovation in financial practices. The American public had been sold shoddy merchandise on many previous occasions. However, based on our criteria of control of real property, there is a decided distinction between the Allegheny incident and the sale of Peruvian bonds. By inference this distinction separates the issuing houses from each other. We may tentatively conclude, therefore, that the new issues boom was in part the product of the structure of the investment banking business. The changing attitude of the National City Company (i.e., the decision some time in 1927 to issue the bonds regardless of the reports received) toward these Peruvian issues is indicative of the increasing self-assurance and decreasing lack of any sense of public responsibility of an important "new" investment banking firm. It also clearly demonstrates the decline in lending standards in the market. We will develop this last point more fully when we discuss the pattern of new issues.

Further evidence on the structure of investment banking in the 1920's comes from examination of the number of business organizations involved in the issuance of securities in the year 1929.[18]

In 1929, out of slightly less than 1,000 organizations involved in security issues, about 87 per cent participated in five or fewer issues; about 7 per cent took part in from six to ten issues; 4 per cent in from eleven to twenty issues; about 1 per cent from twenty-

[17] *Ibid.*, p. 129; Ilse Mintz, *Deterioration in the Quality of Foreign Bonds Issued in the United States, 1920–1930:* National Bureau of Economic Research, 1951, especially Chap. 6.

[18] The data are from *American Underwriting Houses and their Issues*, New York City National Statistical Service, Serially 1926–1935, O. P. Schwarzchild, editor.

Since the data represent at best an approximation of the number of issuing organizations I have used percentage figures. Organizations are primarily commercial banks and investment banks. Some Canadian firms are included.

one to thirty issues; and less than 1 per cent in thirty-one or more issues. Significantly, the more conservative prestige-minded houses were far from the top in number of issues handled. The leaders in number of issues participated in were such firms as Halsey Stuart, National City Company, E. H. Rollins & Sons, and Harris Forbes.

The data on the number of potential issuers and the number of new issues (see below), tend to contradict the preconception that at least in the 1920's concentration in investment banking could seriously restrict the availability of money capital to business. The availability of money capital to business enterprises in the 1920's was a function of the greater ease of entry into the investment banking business, the easy money policy, and the high expectations of security purchasers. When expectations shifted as security prices collapsed in the fall of 1929, money capital was available only to the best situated borrowers. In effect there was a marked increase in concentration in investment banking and a reduction in the availability of money capital to business after the turning point in 1929.

The Shifting Pattern of Security Issues

Our second assertion relates the pattern of new security issues to the accepted norms of monetary policy. Accordingly, let us now examine in some detail the data on the value and number of new security issues in the period from 1926 to 1932.[19]

The principal conclusion indicated by the data on the value of new financing during the period is that while the over-all figures on the volume of "new capital issues by domestic corporations" followed a normal cyclical pattern by increasing until 1929 and then

[19] Data on the *number* of new issues and on specific security issues by companies come from the monthly summaries in the *Commercial and Financial Chronicle*. All data on the dollar volume of new issues are from *Banking and Monetary Statistics*. The basic source of data is the record of security issues compiled by the *Commercial and Financial Chronicle*. A complete description of the *Chronicle's* sources may be found in C. C. Abbot, *The New York Bond Market, 1920–1930* (Cambridge, 1937), p. 32, n. 5; and also in the *Commercial and Financial Chronicle*, Vol. CXII (March 26, 1921), pp. 1,216–1,218.

The figures from the monthly reports of the *Chronicle* have been summarized by the Board of Governors of the Federal Reserve System in *Banking and Monetary Statistics*, Washington, D. C., 1943. The Department of Commerce in the *Survey of Current Business*, February and April, 1938, published certain revisions of the data; and the figures given in *Banking and Monetary Statistics* reflect the adjustment so that there are certain differences in the monthly figures as originally given by the *Commercial and Financial Chronicle*, and as summarized by the Board of Governors.

The term "new issue" does not mean that these funds were used for new plant and equipment expenditures; a large part of these new funds were spent for purely financial transactions. See George A. Eddy, "Security Issues and Real Investment in 1929," *Review of Economic Statistics* (May, 1937). Eddy's data indicated that out of $8,002,000,000 new capital issues by domestic corporations in 1929, only $2,002,000,000 or approximately 25 per cent went for real investments.

subsequently declining, the various subcomponents of this series did not. The rapid increase in the relative and "absolute" importance of common stock financing prior to 1929 indicates a progressive lowering of credit standards in the new issues market. Debt securities represent a contractual claim against income during operations, and a prior claim against assets in case of liquidation. Equity securities, whether common or preferred stocks, represent a contingent claim against income and a residual claim against assets. The shift in the market away from debt to stock financing meant that it was increasingly possible to sell securities which gave much less legal protection to the buyer. To put it the other way around, the public was willing to sacrifice a higher degree of certainty of income and repayment of principal in the hope of capital gains. Once the turning point was reached, this process was reversed, and credit standards went up rapidly in the market. At the depth of the depression, only debt securities were saleable in the market.[20]

It is worthwhile to review in greater detail the data on the various types of financing during the period. The total dollar volume of financing, including refunding and foreign issues, increased as indicated on Chart I by 56 per cent from 1926 to 1929. From 1929 to 1932, the volume fell by 85 per cent.

"New capital issues by domestic corporations" increased by 113 per cent from 1926 to 1929, or from $3,755,000,000 to $8,002,000,000. From 1929 to 1932, the decline was 96 per cent, or from $8,002,000,000 to $325,000,000. Taken as a percentage of the total dollar volume of new capital issues (i.e., total financing including domestic corporations, government subsidiaries, and foreign, less issues for refunding), this series became an increasingly larger percentage of that total up to 1929, and a declining proportion of the total thereafter. In 1926, 60 per cent of the total new capital issues were made by domestic corporations. In 1929, new capital issues by domestic corporations amounted to 79 per cent of the total new issues; in 1932, they were only 27 per cent of the greatly reduced total. New capital issues by domestic corporations are classified by the *Chronicle* as either bonds and notes, preferred

[20] The phrase "lower credit standards" usually means less credit rationing. It applies to a loan market – quite often to borrowers from the commercial banking system – where there is at all times a "fringe of unsatisfied borrowers." One way to test for changes in credit standards would be to examine the quality of loans that are acceptable to lending institutions. In the case of the securities markets where the "lending institutions" are the entire range of stock and bond purchasers, an indication of the change in credit standards may be obtained by examination of the terms, conditions, and quality of the new securities purchased by the public.

stock or common stock. The dollar value of bonds and note issues for new capital in 1926 was $2,665,000,000, and in 1929 it was $2,077,000,000, a decline of 22 per cent. The peak year for new debt issues was 1927 ($3,182,000,000), and a secondary peak occurred in 1930, when new debt issues amounted to $2,979,000,000. The volume of new debt financing fell rapidly after 1930. However, as is shown on Chart II, the rate of decline in the debt series for the last two years was less than that of the common stock component. The dollar volume of preferred stock issued showed a fairly steady advance from 1926 to 1929, and a rapid decline thereafter. The rate of increase was less than that for common stock, but the decline occurred at a similar rate to the latter series. The common stock series shows only a moderate increase in 1927, but 1928 and 1929 represented spectacular advances. The total volume of common stock financing from 1926 to 1929 rose from $579,000,000 to $4,406,000,000, or a percentage increase of 661. The decline was from $4,406,000,000 to $11,000,000, or almost a 100 per cent (99.8) decline from 1929 through 1932.

The next step is to examine the performance of the three components – bonds and notes, preferred stock, and common stock as percentages of the total "new capital issues by domestic corporations." Prior to the turning point, in September, 1929, the high percentage for the bonds and the notes was in the third quarter of 1926, when they represented 76 per cent of the total new capital issues by domestic corporations. The low came in the third quarter of 1929 when only 15 per cent of the total was in the form of debt issues. In yearly terms, it was 71 per cent in 1926, and 26 per cent in 1929. From the turning point in the new issues market to the depth of the depression, the percentage moved in the opposite direction. In 1930, 67 per cent of all new issues were debt in some form; in 1931, 80 per cent; and in 1932, 94 per cent. In the second quarter of 1932, all issues (100 per cent) were debt.

Percentagewise, the common stock series moved inversely with the debt series. In 1926, new common stock financing comprised 15 per cent of the "total new capital issues by domestic corporations." This percentage fell slightly in 1927, then increased rapidly until 1929 when 55 per cent of all new capital issues by domestic corporations were in the form of common stock. The high tide of common stock financing occurred in the third quarter of 1929, when common stock issues made up 65 per cent of the total. After the turning point, the amount of common stock financing fell steadily

until 1932, when in that year only 3 per cent of new capital issues by domestic corporations consisted of common stock.

The preferred stock series showed considerable stability from 1926 to 1929. It was 14 per cent in 1926, rose to 22 per cent in 1928, fell slightly in 1929 to 19 per cent, and then once past the turning point, the percentage fell sharply to 3 per cent in 1932.

If we switch from examination of the value of new issues to the number and size distribution of new issues the same decline in lending standards noted above is observed.

From 1926 to 1929 (Chart III), the total *number* of new capital issues by domestic corporations which took the form of bonds and notes declined. (The year 1927 actually was the high point in the number of debt issues.) By size of issue, there was a marked decline in the issues in the smaller size category, and a small increase in the larger size category. The decline in the small size issues from 1926 to 1929 was directly related to the falling off in building activity, particularly after 1927.[21] Considerably more interesting is the period after the turning point, particularly the first half of 1930 which was characterized by debt issues of large size:[22]

New financing in the United States during January (1930) reached good sized proportions, reflecting a return to the normal after the setback occasioned by the stock market collapse in the autumn of 1929, though the total is large by reason of the bringing out of some issues of unusual size — such as the offering of $150,000,000 5's by the American Telephone and Telegraph Company, $87,500,000 Pacific Telephone and Telegraph stock, and $50,000,000 debenture 5's by the International Telephone and Telegraph — rather than being made up of a host of issues of ordinary size.

The tendency for debt issues to increase in size and to reduce in number, so noticeable in the first half of 1930, continued in 1931.[23] In 1931, the peak month for debt financing was March, and the *Chronicle* had the following comment:[24]

The point of most importance, however, in any broad consideration of the subject, is that the floating of a few issues of unusual size accounts for the bulk of the new financing for the month. This shows — and the feature has been

[21] "This enormous increase occurred before 1927; from then on construction declined. Thus the final spurt in economic activity during 1928–1929, vigorous enough to expand total capital formation by $3 billion, and to induce the largest single year's increase in gross national product since 1923, was in the face of deflationary pressures operating on the largest single component of total investment." R. A. Gordon, *Cyclical Experience in the Inter-War Period: The Investment Boom of the 'Twenties*, Bureau of Business and Economic Research, University of California (Berkeley, 1952), Reprint 8, p. 201.

[22] *Commercial and Financial Chronicle*, Vol. 130, No. 3373 (Feb. 15, 1930), p. 1,030.

[23] In 1929 the total number of debt issues was larger than in 1930, but the dollar volume was smaller.

[24] *Commercial and Financial Chronicle*, Vol. 132, No. 3433 (April 11, 1931), p. 2,660.

noted on other recent occasions – that borrowing was on behalf of strong and powerful undertakings and organizations, and holdings, for one reason and another, exceptionally favored situations, and that as yet there is little indication of any widespread or general appeal to the investment market.

While bond issues declined in number and value prior to the crash, investment and holding company issues were surging upward from $271,000,000 in 1927 to $1,033,000,000 in 1928 and to $3,131,000,000 in 1929.[25] In the year 1929 there were almost 300 investment company issues, of which about 90 per cent were in the first three-quarters of the year.[26] Many of these represented purely local undertakings, but the big issues dollarwise were tied closely to the large investment banking houses. The approximately fourfold increase in the value of these issues from 1927 to 1928 and the twelvefold increase in 1929 over 1927 are further evidence of the purely speculative character the boom assumed after 1927.

The evidence on bond and stock yields is consistent with the observed pattern of security issues. From 1926 through 1931, bond yields on a yearly basis (Chart IV), varied less than 1 per cent. Industrial bonds moved between 4.8 and slightly over 5.5 per cent while utilities, railroads, and United States government long-term obligations moved in narrower ranges at slightly lower rates. The internal shifts in rates among the various classes were very slight. All bonds reflected the trend toward equity financing and higher interest rates by selling at higher yields in 1929. But in no instance was the 1929 high for bond yields markedly different from what it had been in 1928 or shortly before.[27]

On the other hand, stock yields reflect emphatically the shift to equity financing and the rapid increase in equity price levels. The *yield expectations* for all stocks fell from over 5 per cent in 1926 to just over 3 per cent in 1929.[28] For all stocks, the low yield expectation was 2.90 in September, approximately 2 per cent less than the

[25] F. C. Mills, *Economic Tendencies in the United States* (New York, 1932), Table 169, p. 427. The data, a special compilation from the *Chronicle*, are for the National Bureau and represent a series of issues for "unproductive" purposes. It should be recalled that in the 1920's the distinction between investment companies and holding companies was not as sharp as it is today.

[26] Data are from *American Underwriting Houses and their Issues, op. cit.*, and are for issues listed as "Financial, Investment Trusts and Security Investment Companies."

[27] It may be that the slight increase indicated had some effect on marginal borrowers, particularly those whose debt instruments were of low quality. Thus, bonds of poorer quality show slightly higher rates of increase than indicated on Chart IV. But in view of the amount of equity funds available in the market, this does not appear to have been a serious consideration.

[28] Yield expectations: "the prevailing annual dividend rate, multiplied by the number of shares outstanding, is shown as a percentage of total stock values" *Coules Commission Monograph number 3 Common Stock Indexes, 1871–1937* (Bloomington, Indiana, 1938), p. 3.

yield expectation in September, 1926, and almost 1 per cent less than in 1928. Utility equities show the greatest decline in yield,[29] from over 5 per cent in September, 1926, to slightly over 1¼ per cent in September, 1929.

The yield expectations for all categories of common stocks in September, 1929 (industrial yield expectation 3.16, utilities 1.68, railroads 3.75), were well below the yield on all private bonds, and with one exception (railroads) well below the yield on long-term government bonds (3.65 yield in 1929). The relationship between bond and stock yield expectations gives substance to the observation that in 1929 stock prices not only had discounted the future but the hereafter as well.

Tumbling yields seemingly had no influence on the public's willingness to buy stocks. The volume of new issues moved inversely with the yield expectations. The public absorbed (at least temporarily) an increasing amount of securities at yields equal to or less than going bond yields. The willingness of the public to buy equities on this basis meant that funds were being made available to business on terms that would not have seemed possible several years earlier. This point may be emphasized by pointing out that for the 1920's as a whole, for all types of corporations, debt financing was a significantly larger total than equity financing. For example, in 1926, 1927 and 1928, of total value of new issues by domestic corporations 62 per cent was new debt, while for 1926 and 1927, new debt was 71 per cent of total new issues by domestic corporations. Only in 1928 and 1929 does the shift to equity financing occur and there it is primarily in financial corporations. Together, the two phenomena of an increased volume of equity financing and falling equity yields are indicative of the effect of the expectations of stock traders on credit standards.

At this point, it is important to recall a general characteristic of the market in the late 1920's. The phrase "new era" indicated a general preconception that fundamental structural changes had occurred in the economic organization of the country which made prolonged hard times impossible. While there was little "real" evidence to this effect, the preconception was important and was

[29] In spite of the almost incredibly low yields on utility stocks, the utility industry did not take advantage of the situation to increase plant and equipment significantly. The year 1929 for all utilities excluding railroads shows an increase of $274,000,000 in plant and equipment expenditures over 1928, but this was only $40,000,000 more than the increase from 1923 to 1924. The bulk of the increase came in telephone ($158,000,000) and electric power ($95,000,000). Even though utility stock yields remained low in 1930, expenditures on plant and equipment dropped by about $40,000,000. George Terborgh, Federal Reserve Bulletin (Sept., 1939), Table 2, p. 732, the sum of columns 3, 4, 5 and 6.

tied to the increase in common stock financing.[30] The great collapse in the stock market in the last quarter of 1929 caused only the temporary end of the "new era." The period from the turning point until some time before the end of 1931 was a time of recurring optimism. Not until the second half of 1930 and then not completely until 1931, did the market accept the view that quick recovery could not be expected.

If the prosperity of the 1920's had come to an end in 1927, an index of stock prices comparing December, 1895, with December, 1927, would have shown an increase of 289 per cent in the thirty-one year period (about 9 per cent per year, or, if compounded annually, at a rate of 4.48 per cent).[31] An increase of this type was not far out of line with the growth of industry and profits. But the moderate rate of increase in security prices changed quite suddenly into the violent stock boom of 1928–1929. The stock price average for the year 1929 was 190.3, an increase of 61 per cent over the year 1927. Comparison of September, 1929 (225.2), with December, 1927, shows an increase of 69 per cent in twenty-one months (a rate of 30.05 per cent).[32] In terms of expectations, long-run business expectations were good (primarily because of the long period of expansion) and probably would have remained that way for some time regardless of short-run changes. But in the latter part of 1927, a change occurred and the general public became convinced that in the short run, at least, stock market prices would go up. Accordingly, an increasingly larger number of speculators entered the market, and those already in the market increased their existing holdings. It should be remembered that if margin requirements are relatively low and prices are rising, the leverage effect of margin trading makes it possible for a trader to pyramid, that is to increase both the number of shares held and his equity in those shares without expending additional funds.

The condition of expectations and the increasing stock prices meant that the attractions in the market place were not confined to trading. From September, 1927, through the first week in October, 1929, money rates increased. In September and October, 1927,

[30] Perhaps the Federal Reserve System provided a false basis for estimating the strength and stability of the banking system.

[31] The changes are slightly different if measured on an annual basis instead of from the December values.

Value for December,	1895	34.2	Value for year	1895	34.8
" " "	1927	133.1	" " "	1927	118.3

(230 per cent or approximately 7 per cent per year)

Cowles Commission, op. cit., p. 66 "All Stocks."

[32] Ninety-two points in the index or about four points per month. In speculative issues, of course, the increases were much larger.

ninety-day Stock Exchange loans ranged from 4 to 4.38 per cent while new call loans varied from 3.5 to 4.18 per cent. For the same period in 1928, the range for time loans was 6.5 to 7.38 per cent and new call loans were slightly higher, ranging from 6.42 to 7.69 per cent. In 1929 for the month of September and the first week of October, time rates varied from 8.88 to 9.13 per cent, while new call money was quoted from 8.08 to 9.03 per cent.[33] The more than doubling of rates on Stock Exchange loans attracted an increasing amount of money capital into the market. To a large extent this consisted of "loans on the account of others" rather than loans by the commercial banking system. (The "others" were foreign banking agencies, corporations with large cash balances, other brokers and individuals possessing idle funds seeking transitory employment.) These loans amounted to $1,680,000,000 on September 30, 1927, $3,610,000,000 on October 3, 1928, and $6,640,000,000 on October 4, 1929.[34]

The effect of these loans was to add an element of instability to the credit structure which was supporting the stock bubble. These lenders were attracted to the market by the optimistic short-run expectations, which made these loans seem safer than usual, and by the steadily increasing rates. When the serious break in the market in late October changed short-run expectations, these lenders deserted the market. By December 31, 1929, the value of these loans was only $2,450,000,000, a four-billion-dollar decline in three months.

What events in 1927 brought about the change in short-run expectations and the accompanying collapse in lending standards? Certainly the factors already mentioned – the prolonged prosperity, the self-assurance of the business community, especially the investment bankers, and the absence of effective regulation were decisive influences. But there were also two additional factors of great importance, one of which we may call the emotional climate of the times. We will not attempt to evaluate such diverse events as the Florida land boom and the effect of the automobile on the Ameri-

[33] Partly because of the moral suasion exerted by the Federal Reserve Bank, a severe monetary stringency developed in late March, 1929. Call rates jumped to an average of 14.40 in the last week of March. The rate on the 26th was well above 15.5 per cent. It was the next day that Charles E. Mitchell announced that the National City Bank was ready (in defiance of Federal Reserve Board wishes) to lend $20,000,000 in the market; $5,000,000 at 15 per cent, $5,000,000 at 16 per cent, etc. Mitchell's action apparently checked the precipitous decline of the 26th. The market regained confidence, money rates eased and prices began to move up again. Excessive manipulation of the market may have had an effect both on the supply of and demand for loan funds and so have been partially responsible for the credit tightness that developed in late March.

[34] *Banking and Monetary statistics, op. cit.*, p. 494.

can home. However, taken collectively, these and other similar developments of the 1920's are an indication of social change and instability. This instability combined with the traditional American preoccupation with business, money making, and speculation contributed heavily to the public's lack of judgment.

The second important factor, security manipulation, has already been discussed briefly. Manipulation of stock prices to create the conditions that will ease the selling of securities is as old as security selling itself.[35] The first important corner on the New York Stock Exchange occurred in the 1840's, and throughout the nineteenth and early twentieth centuries manipulative practices of many kinds became an accepted part of the security business.

Security manipulation was such an important factor in the market in the twenties that we will examine two examples of manipulation to note the various aims of the manipulators. The first involves the maintenance of a market for the stock of a company so that additional issues could be sold. The second, a stock pool whose sole objective was to affect the price of a security in such a way that the "insiders" could make profits by trading.[36]

The relationship between Henry L. Doherty and Company and Cities Service Company may be used to illustrate the first case. In the late 1920's, Doherty and Company not only handled all new issues for Cities Service but they manipulated the market for Cities Service securities so that additional new issues could easily be marketed.[37]

If churning the market was a traditional device to assist in the selling of securities, it became in the late 1920's an important phenomenon in its own right, and the price increases generated by manipulation had an effect on the business community.[38]

The pool activities in Radio Corporation of America common

[35] For description of these practices in seventeenth- and eighteenth-century England, see W. R. Scott, *The Constitution and Finance of English, Scottish and Irish Joint-Stock Companies to 1720* (3 vols.; London, 1912), see especially Vol. III; see also Redlich, *op. cit.*, pp. 375 ff.

[36] In this connection, *The Security Markets* (New York, 1935), pp. 443–508, gives an excellent description of techniques of security manipulations in the 1920's and 1930's.

[37] F.T.C., Utility Corporations Report, No. 72–A, Senate Document 92, 70th Cong., 1st Sess. (1935), p. 543.

For example, in the latter part of April, 1927, a clique of "bear" speculators sold Cities Service common stock short in large volume while spreading a rumor of the death of Mr. Doherty. The Doherty management resisted this bear raid, making purchases in large volume of the shares offered for sale on the exchange. On one day, April 30, 1927, Henry L. Doherty & Co. purchased 25,373 shares of this stock at the total cost of approximately $1,086,000. Under the influence of the bear raid, the closing market quotation for this stock sagged from $51⅝ per share April 1, 1927, to $44 (or a low of $41) on April 30; but after the market support furnished by the Doherty management had overcome the effects of the bear raid, the market quotations again rose and continued to rise steadily to a close of $53¾ per share on December 31.

Ibid., pp. 544–545.

[38] See Gordon, *op. cit.*, pp. 208–209.

stock in March, 1929, is our second example.[39] In the late 1920's, the Radio Corporation of America and all elements of the press kept up a steady flow of information about RCA. Radio was new, it had unlimited technological possibilities, and new technical developments were constantly called to the public's attention. Furthermore, RCA was a growing company and promised to grow even faster in the future. Earnings were high and were increasing. From March 1 to March 20, the *New York Times* carried seventeen press releases on RCA, the *New York Herald Tribune* sixteen, and the *Wall Street Journal* sixteen. RCA was continually plugged in this indirect fashion, and in addition, prior to the pool operation, the newspaper tipsters (such as "Trader" in the *New York Daily News*) constantly publicized the "coming fireworks" in RCA. They urged the public to jump on the bandwagon as the coming operation was to be a bull pool and that was the time to buy.

Manipulation intensified the public's interest in the market and, more than anything else, it brought about the change in the basis of valuation of securities. Until 1927, at least a fairly reasonable basis of evaluation had existed. After 1927, valuation was made largely on an irrational basis. Capital gains became a certainty as future values could only be higher than the current values. "Be bullish on America" was the slogan. This type of thinking is only completely irrational in the long run. In the short run, it is the only profitable way to "play the game." The game continued in 1928 and into 1929. Several times during this period, the market hesitated and sank back a little, but after each lull, it rose faster than before. The strength of each of these recoveries added credence to the popular myth of a continually rising market. But since a structure built primarily on expectations cannot endure forever, the eventuality of a price collapse gradually became a certainty.

Effect of the Market on Consumption and Investment

The great panic in the fall of 1929 has become an important symbol in American history. It marks the end of the buoyant, reckless twenties and the beginning of the stagnant thirties. As a historical landmark, the stock bubble has great importance, but the crucial economic question that must be answered is what was the effect of the behavior of the market on general business conditions? What follows are some observations on our third assertion,

[39] *The Security Markets, op. cit.*, pp. 475–483.

i.e., the impact of the capital market on consumption and investment.

The progressive deterioration of credit standards in the capital market contributed to unwise security issues by certain business concerns. But it is very difficult to establish a direct connection between the ease with which funds were available and any unrealistic acquisition of *plant and equipment* or excessive *inventory* accumulation of business enterprise. Eddy has worked out the details of the amount of "real investment" resulting from issuance of new securities in 1929.[40] Out of approximately $8 billion worth of new security issues by domestic corporations only $2 billion were for productive purposes. Of this $2,001,550,000 total, $1,076,179,000, or about half was raised by the sale of stock, both common and preferred. This was, of course, far below the 74 per cent of total new capital issues by domestic corporations which were in the form of common and preferred stocks. On this evidence, it would appear that in spite of the advantages of stock financing in 1929, corporations still relied heavily on debt instruments to finance "productive expenditures." [41]

Three classifications of business accounted for 68 per cent of the productive investment: "Public Utilities," 29.7 per cent; "other industrial and manufacturing," 18.1 per cent; and "land and buildings," 20.2 per cent. Of these, the industrial and manufacturing group did almost all their "productive" financing by means of stock issues, public utilities acquired slightly less than 60 per cent of new "productive" capital by stock issues, while land and building enterprises relied primarily on bonds and notes. Only in the case of the industrial and manufacturing category is it likely that stock market conditions, i.e., high equity prices and low equity yields, contributed in any significant fashion to unwise acquisition of plant, equipment, and inventory. And the aggregate amount of such unwise borrowing in this last group even if all equity issues were for unrealistic purposes was about $341 million.

This evidence indicates that conditions in the capital market did not contribute in any significant manner to unwise investment by business in real assets. However the low credit standards in the market did make possible unwise corporate integration and the

[40] See Eddy, *op. cit.*, p. 85.

[41] This conclusion is based on Eddy's evidence for 1929, but it may not have general validity. If business conditions had remained good for a longer time, and if stock prices had continued at high levels while yields were very low, it is logical to assume a greater shift to equity financing. The 1928–1929 stock bubble did not allow sufficient time for a complete reorientation of business thinking.

creation of a holding company structure that was uneconomic.[42] It appears that a portion of the funds that went into purely financial transactions in 1929 tended to create structural weakness (i.e., holding companies with insufficient earning bases, unsound mergers, etc.) in the American business system; weaknesses that were revealed as soon as the level of corporate earnings fell by a significant amount. Specifically, the areas with large volumes of new yet "unproductive" issues were the railroads, public utilities, industrial and manufacturing, a miscellaneous category, and, of course, investment trust, trading, and holding company issues. How much firms in these areas suffered during the downswing in business as a result of their financial activity and how much they may have been strengthened is unknown, but it seems likely that the effect was mixed.

If we turn from investment to consumption we find that in the aggregate, the flow of consumer goods shows steady increase throughout the 1920's from $52.5 billion in 1920 to $76.4 billion in 1929.[43] The two years of greatest growth were between 1922 and 1924 when the flow increased $9.5 billion. The increase from 1927 to 1929 was only $4.7 billion; from 1928 to 1929, it was $3.2 billion.

Consumers' outlays increased from $50.9 billion in 1920 to $77.0 billion in 1929.[44] Once again, as in the case of the flow of goods to consumers, the increase from 1922 to 1924 was greater than the increase in the late 1920's. From 1927 to 1928, the absolute increase in consumers' outlays was $2.2 billion while from 1928 to 1929, it was $3.2 billion. However, if we translate these absolute increases into a marginal propensity to consume by comparing the changes in consumers' outlays to the changes in aggregate payments to individuals (including entrepreneurial savings),[45] in 1928 the marginal propensity was considerably greater than 1 (1.47), while in 1929, it was less than two-thirds (.64). (It may be that the sharp increase in aggregate payments to individuals in 1929 – $5.0 billion over 1928 as compared with $1.5 billion for 1928 over 1927 – was related to capital market activity.) The evidence of "expenditures on services rendered directly to consumers" is equally inconclu-

[42] An important offset to this, however, was the strengthening of the cash balances of certain firms as a result of new equity issues. What is needed is analysis and evaluation of the effect of the missing $6 billion "non-productive" new issues in 1929 on the structure of industry.

[43] All data from S. Kuznets, *National Product Since 1869* (New York, 1946), p. 52. The flow of goods to consumers is a sum of commodities and services. In essence it is the difference between national income and net capital formation.

[44] This data from S. Kuznets, *National Income and its Composition, 1919–1938* (New York, 1941), Vol. I, p. 147, Table 5.

[45] *Ibid.*

sive.[46] Almost all categories of consumption increased in 1929, but in no case was the increase particularly different from the kinds of increases recorded throughout the decade.[47] For example, the increase in recreation and amusement spending was greater in 1929 than it had been in 1928 while, on the other hand, the outlays for personal services were less.[48]

Contradictory evidence of this kind reinforces the opinion that the capital market had little effect on short-run consumption.[49] On an *a priori* basis, it is reasonable that a steadily rising stock market would have only a small effect on the level of consumption. Personal consumption could be increased by the stock market in several ways. Increased activity in the market would result in higher incomes for those individuals directly employed in the field of finance. Capital gains might be realized by those trading in securities and these gains translated into higher levels of consumption. Interest in stock trading might persuade individuals to transfer other cash balances (or even postpone investment and consumption expenditures to acquire such cash balances) into security purchases to obtain higher yields which when realized would result in a higher level of consumption. In the first case, the number of people employed in finance has always been relatively small, and while they may have increased their spending on consumer items, it is unlikely that such a small number of individuals would have had a serious effect on the general level of demand for consumption items.[50]

In the aggregate it is unlikely that those who traded on their own account and who realized capital gains, increased their consumption in any significant amount. A rising market attracts funds so

[46] Harold Barger, *Outlay and Income in the United States* (New York, 1942), p. 227, Table 22.

[47] There were, of course, exceptions such as radio sets, but these cases have a likely alternative explanation.

[48] D. Hamberg, *Business Cycles* (New York, 1951) suggests that speculative profits from the stock market were a stimulus to consumption. See especially pp. 373 and 426. This may have been the case, although the effects of such a stimulus were probably local, i.e., limited to certain specific metropolitan areas. These local expenditures, as indicated above, were not sufficient to show in the aggregate data and so Hamberg offers an under-consumptionist, under-investment explanation of the downturn. See pp. 420–425 and 442–453. Both Hamberg and Gordon, *op. cit.*, suggest that rising stock prices and the condition of short-run expectations acted to shift the marginal efficiency of capital schedule to the right after 1927. This may well have been the case, but, as the Eddy evidence cited indicates, the effect did not show up in a new pattern of security sales for productive purposes.

[49] If quarterly data were available, this conclusion might have to be modified. This is particularly true of the year 1929.

[50] An interesting sidelight on this question is how did the brokers and dealers in securities actually behave during the period of the boom. There is constant reference in the literature on the South Sea Bubble of 1720 to the high and mighty ways of the directors of the South Sea Company. Their conspicuous consumption in the spring and summer of 1720 invited the same combination of disdain and envy that any nouveau riche group encounters.

that paper profits tend to be kept in that form or, if realized, the resulting cash balances are quickly shifted into other securities. (The effect of a falling market on consumption expenditures is not symmetrical. It is quite likely that the capital losses which actually were realized after the crash were reflected in reduced consumer outlays. This effect may have been operative as soon as margin calls were made in any significant amount.) Those attracted toward stock speculation by the rising market are usually tempted to stay on the band wagon. Margin traders would be particularly susceptible to this kind of thinking, especially if their remaining balances due to brokers were very large. If the 1929 market had leveled off for a prolonged period, then undoubtedly capital gains would have been taken and in part, at least, consumed. But the rapid up and then down of the stock bubble left traders (in the aggregate) no time to withdraw at any given level of market activity.

Dividend payments to the increased number of individuals in the market were another possible source of increased consumption; however, stock yields were so low in the late 1920's that it is highly unlikely that funds invested in stocks provided more current income for consumers than did the same funds in bonds or some alternative investment. In fact, it is quite possible that some consumers actually reduced their current consumption, or at least did not increase consumption as their income rose, in order to obtain funds with which to speculate in securities.

Although the data examined show no clear-cut indication that the stock boom and credit conditions in the capital market were important influences on general business conditions prior to the crash, it is perhaps unwise to be too dogmatic about such a conclusion. The stock market was the symbol of the national prosperity of the "new era" and the health and vigor of the market had a tremendous effect on entrepreneurial expectations. The recovery after the recession of 1927, in part, at least, may have been the result of the general optimism in the business community.[51] As we have noted, the stock boom was asymmetrical in its determinable effects on general business conditions. The collapse of stock prices hurt short-run expectations; and although long-run optimism did not die at once, the data on the kind of financing that took place after 1929 indicate a basic change in the terms on which funds were available to even the most favored

[51] See Gordon, *op. cit.*, p. 209.

borrowers. Furthermore, the purely financial transactions of the late 1920's (the missing $6 billion) may have created an unsound superstructure of financial combinations, primarily holding companies, that were vulnerable to any decline in business activity.

By and large, however, the banks and stock exchange firms withstood the panic in the fall of 1929. It was the prolonged liquidation of capital values from their inflated pinnacle to the depths of the depression that compounded the monetary woes of the period after 1929.

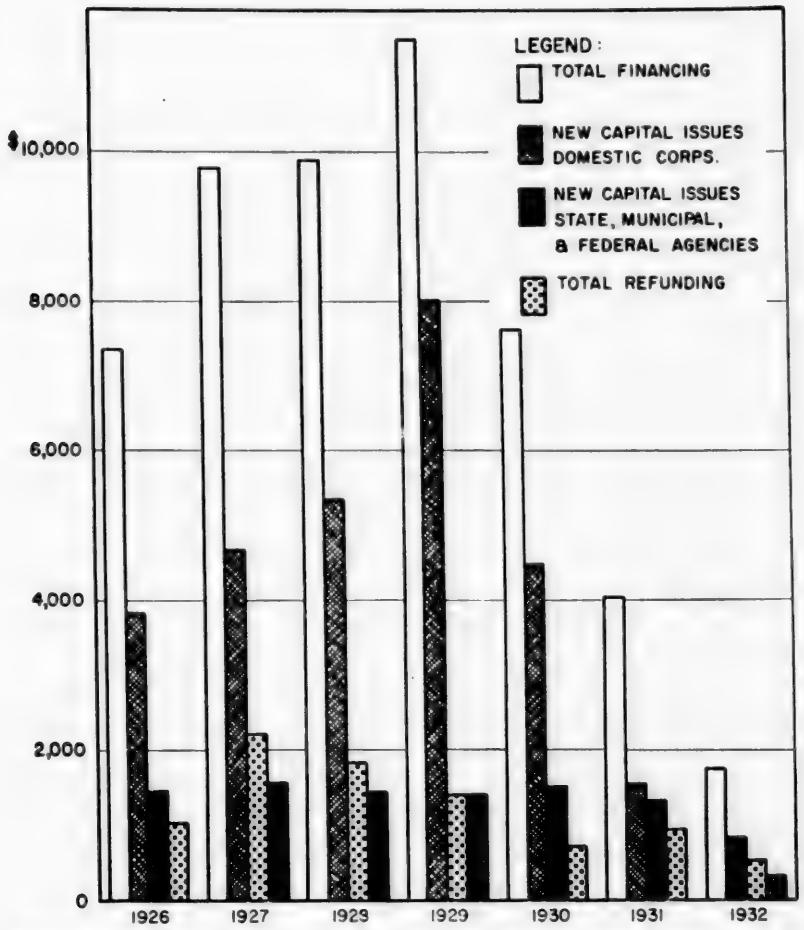
Summary

The stock bubble in the late 20's stands out as a great landmark. It is symbolic to all observers of the American scene, although there are almost as many interpretations of the symbol as there are observers. In all probability, part of the importance generally attached to the stock boom of the 20's is due to the great changes in American life and our economy that came afterwards. From a distance the change in direction of movement of our society is clearly marked.

More specifically, the evidence presented is consistent with the assertions suggested. The absence of a strong central bank, the withdrawal of governmental influence from the market, and the increasingly competitive structure of investment banking meant that there was no possible effective regulation of the capital market, a condition that contributed heavily to the inflation in the number of new issues and in stock prices. The capital market clearly violated the norms of accepted monetary policy, but the effect of this violation on general business conditions is not clear since the adverse effects may have been outweighed by the additional liquid resources acquired by business firms in the market.

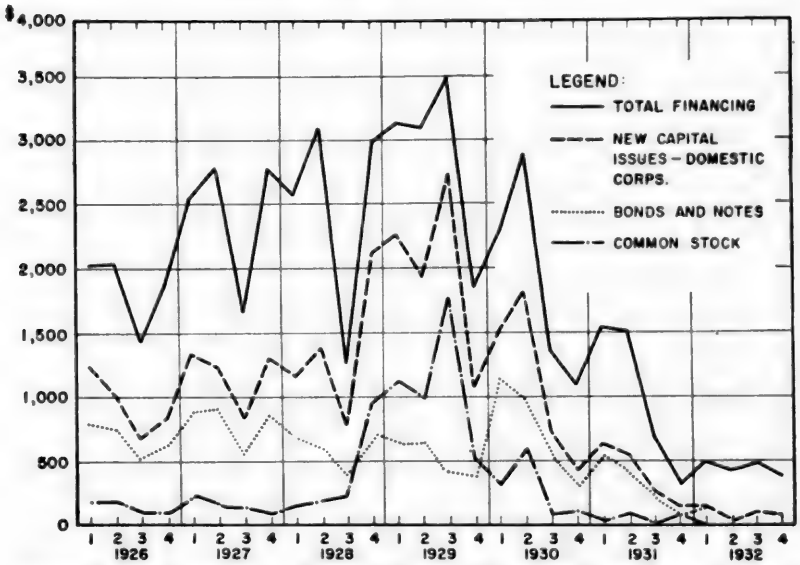
In all probability, the greatest impact of security inflation was on the expectations of the business community after 1927. And it may be that the more speculative nature of the business boom after 1927 was in part, at least, a function of the behavior of the capital market. Aside from this, the evidence does not indicate any close causal connection between the level of economic activity and the stock boom. However, given the complexities and interrelationships in economic affairs, it is best to accept this last conclusion as a tentative judgment.

CHART I
VOLUME OF FINANCING – 1926-1932 (In Millions of Dollars)



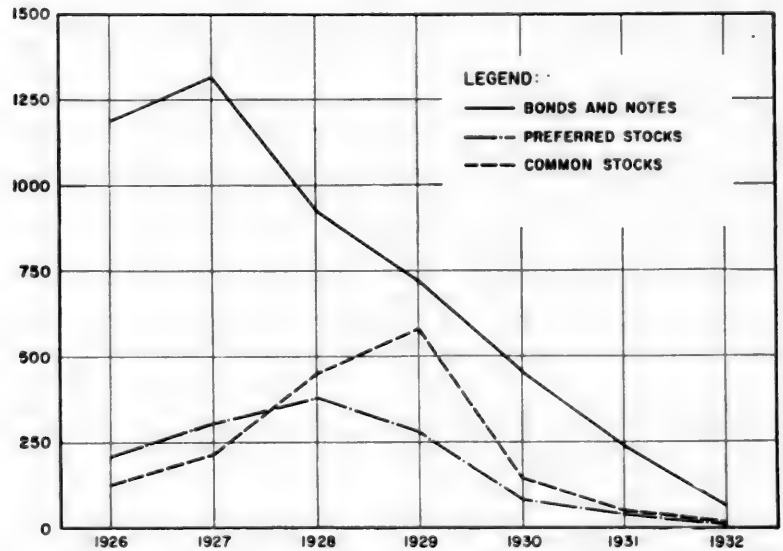
SOURCE: *Banking and Monetary Statistics*, Board of Governors, Federal Reserve System (Washington, D. C., 1943), Table 137, pp. 488–489.

CHART II
SUMMARY OF FINANCING — 1926-1932 BY QUARTERS (In Millions of Dollars)



SOURCE: *Banking and Monetary Statistics*, Board of Governors, Federal Reserve System (Washington, D. C., 1943), Table 137, pp. 488–489.

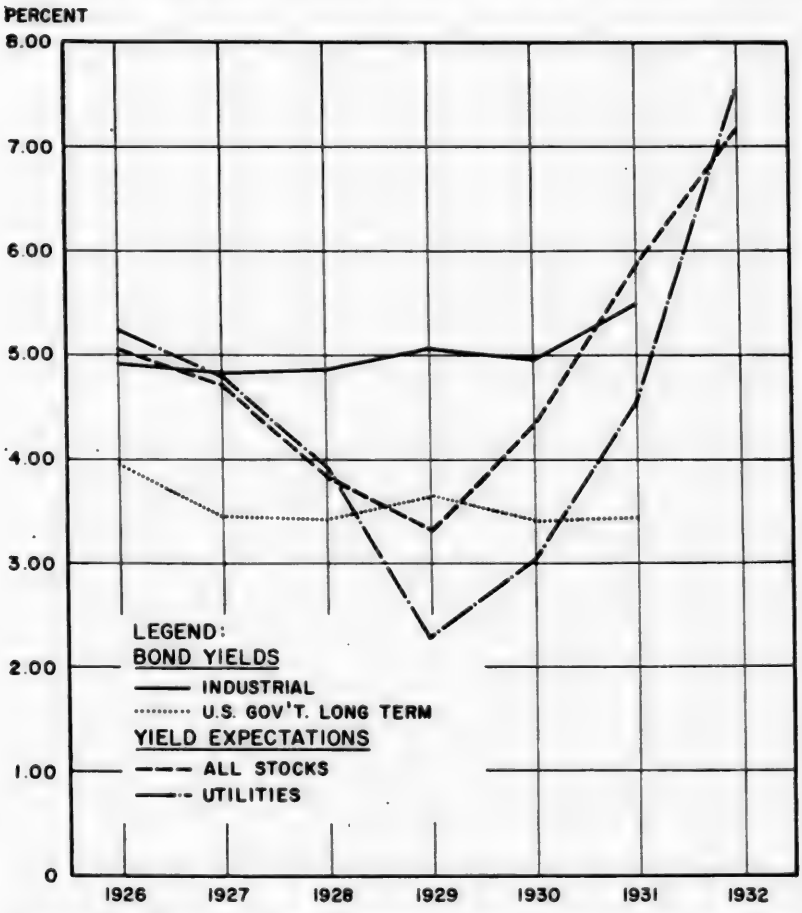
CHART III
NUMBER OF NEW CAPITAL ISSUES BY DOMESTIC CORPORATIONS FOR 1926-1932



SOURCE: *Commercial and Financial Chronicle.*

CHART IV

BOND YIELDS AND EXPECTED STOCK YIELDS — 1926-1932



SOURCE: Bond Yields – U.S. Dept. of Commerce, *Survey of Current Business, Annual Supplement*, 1932, p. 99.
Yield Expectations – *Cowles Commission Monograph No. 3. Common Stock Indexes*, 1871–1937. Bloomington, Indiana; Principia Press, Inc., 1938, p. 270.

By Reinhold A. Dorwart
PROFESSOR OF HISTORY
AT THE UNIVERSITY OF CONNECTICUT

The Earliest Fire Insurance Company in Berlin and Brandenburg, 1705-1711

The first fire insurance program of the Hohenzollern was an important phase in the growth of the concept of risk coverage, incorporating many features regarded as standard in modern insurance practice. The Brandenburg-Berlin scheme also reflected the strengths and weaknesses of a benevolent despotism in its attempts to force the citizenry to protect itself against an admitted menace of major proportions.

Against the hazards of fire there are three primary defensive weapons or measures: fire-prevention and protection, fire-fighting, and insurance against property loss from fire. It was in the seventeenth century that the first serious and general efforts were made to develop and apply all of these measures to the protection of property both real and personal. By the seventeenth century Europe was well advanced in the economic expansion of the Age of the Commercial Revolution. Cities and towns of northern Europe had grown in size and prosperity. The value of houses and commercial buildings had increased considerably and the point had been reached where the damage and loss caused by conflagration could be disastrous, a fact horribly underscored by the Great Fire in London in 1666.

Enlightened rulers of the seventeenth century exploiting the new political absolutism sought by means of various police regulations to introduce measures designed to reduce the danger of the outbreak of fire, and to prevent fire by means of better building codes, compulsory removal of fire hazards from within city walls, and so forth. Progress was made in developing improved fire-fighting techniques as well as in inventing better fire-fighting machines. However, these improved methods were far from adequate either as deterrents of fire or as destroyers of fire. And so long as buildings in town and city, as well as in rural areas, were still primarily constructed of easily combustible materials the threat of serious loss

and even complete destruction of propertied investments was alarming. It was the Commercial Revolution which to a large extent created the great and bustling cities, with their large investments in sumptuous bourgeois homes, warehouses, factories, shops of merchants and craftsmen, banks and bourses, an ever-increasing number of public buildings, churches, schools, hospitals, orphanages, and homes of the many new workers. That same Commercial Revolution also promoted adoption, from marine experience, of the idea of insurance as the third means of combating at least the physical and economic damage caused by fire and conflagration.

The risks of navigation which endangered the financial investments of medieval Italian merchants led to the early beginnings of some form of insurance in the practices known as bottomry and respondentia, from which by the beginning of the fifteenth century, if not earlier, there had evolved a rather complete form of marine insurance.[1] From this precedent apparently there grew, in the course of the seventeenth century, the idea of insurance against the risks of fire.

The earliest emergence of the idea of fire insurance and the first development of fire insurance companies appears to have occurred in England and in the German territories.[2] The neighboring (maritime) countries of France, The Austrian Netherlands, The United Netherlands, and the Scandinavian states followed slowly only after the middle of the eighteenth century. The earliest form of fire indemnity seems to have taken the form of mutual cooperation groups who agreed to help fire victims with contributions of lumber and building materials, labor, and even livestock. It was not until the Great Fire in London in 1666 that the first real efforts at underwriting fire loss seem to have been made. In England the practice began in 1667 with individual underwriters such as the famous Dr. Nicholas Barbon, whose clear recognition of the need for fire insurance and whose enterprise set a pattern which led to the appearance of a number of individual underwriters, proprietary companies, and mutual contribution societies such as The Friendly Society (1683). The earliest ventures into the business of fire insurance were made by individual underwriters on a

[1] For a discussion of the origins of marine insurance see Florence de Roover, "Early Examples of Marine Insurance," *Journal of Economic History*, Vol. V (1945), pp. 172–200.

[2] Fire insurance probably existed in Germany before it did in England. *Feuerkassen* (fire indemnity funds) and *Brandgilden* (fire gilds) were known in individual German towns in the early 17th century. Cf. Francis B. Relton, *An Account of the Fire Insurance Companies Associations Institutions Projects Established and Projected in Great Britain and Ireland During the 17th and 18th Centuries* (London, 1893), p. 7.

private enterprise basis. From these there subsequently emerged corporate fire insurance companies such as the Sun Fire Office (1710), The London Assurance, and the Royal Exchange Assurance. The latter two were the first fire insurance companies to be chartered by the crown (1720).[3] In order to protect both the individual and the corporate underwriters and in order to induce subscription to their companies, it became a general practice of these companies to organize liveried fire brigades for the protection of the houses insured by them, houses identified by an attached fire mark.

Probably the oldest fire insurance company in the world is the *Hamburger Feuerkasse* which was incorporated in 1676 in the City-State of Hamburg as the General Fire Treasury.[4] The only northern European country or territory which made contemporaneous progress in the early development of fire insurance companies, however, was the Electorate of Brandenburg in northeastern Germany. The earliest institution of insurance against the hazards and damage of fire in old Berlin and Brandenburg occurred in 1705.[5] Since at least 1660 the Hohenzollern rulers had been greatly concerned with fire-prevention and with improved methods of fire-fighting.[6] Fire, nevertheless, took its toll. Replacement of houses and other buildings as well as furnishings and other personal property was not easy for a people who were not prosperous and a territory that was not populous and whose chief economic position was that of a commercial entrepot between the maritime powers of the North and Baltic Seas and the interior territories of Poland,

[3] For a brief summary of the origin of fire insurance concerns in Great Britain see Alwin E. Bulau, *Footprints of Assurance* (New York, 1953), pp. 125–145. Presumably, a proper claim to the distinction of being the first fire insurance company in England might be made for Barbon's Fire Office formed in 1680 and incorporated in 1688. See also D. E. W. Gibb, *Lloyds of London: A Study in Individualism* (New York, 1957).

[4] Bulau, p. 245. The first fire insurance company in France was chartered in 1754, although a *Bureau des Incendies* was established in 1717 to aid fire victims with funds contributed by public charity. "All in all, fire insurance in eighteenth-century France was in an embryonic state," see Shelby T. McCloy, "Fire Relief and Prevention," *Government Assistance in Eighteenth Century France* (Durham, N.C., 1946). On France see also Bulau, pp. 235–236.

[5] An earlier effort had been made in 1701 to set up a cooperative assistance program in the rural areas of Brandenburg. By a Fire Ordinance of 26 January 1701 the Elector directed that in each of the counties (*Kreise*) of Brandenburg six to ten neighboring villages were to form a Fire Society to help each other. If one village was burned out, the others were to furnish lumber, straw for the roofs, hauling and labor if necessary to aid in reconstruction. To defray money costs the villages were to make collections through boxes placed in the village churches. This was a program of mutual assistance but not of insurance. It was of the older pattern of fire gilds and mutual assistance societies but with the advantage of allying groups who were not likely to be affected by the same disaster as had sometimes occurred with such societies formed in cities by neighboring house-owners. *Corpus Constitutionum Marchicarum*, ed. Christian Otto Mylius (Berlin, 1740), Vol. V, Part I, Chap. 2, No. 7, Cols. 169–172 – hereafter cited as Mylius.

[6] For a discussion of fire prevention and fire fighting in Brandenburg see my article "Prussian Fire Protection 300 Years Ago," *Quarterly of the National Fire Protection Association*, Vol. 51, No. 3 (Jan., 1958), pp. 195–205.

Silesia, Bohemia, and Saxony. The solution to the lack of capital appeared to lie in setting up a fire insurance project sponsored by and managed by the state.[7]

There was established in Berlin a Fire Office, located in a building called The Black Eagle, for the purpose of handling fire insurance funds. This was not a privileged or chartered fire office or fire insurance company but rather an administrative bureau of the state established by a Regulation of 15 October 1705.[8] This bureau was not a regulative or supervisory office of insurance concerns; it was in the insurance business, having a state monopoly of that business. This Fire Office of 1705 is particularly interesting historically because without any evolutionary transition it emerged immediately with many features regarded as standard in modern fire insurance practice.

The Regulation of 1705 made provision for Brandenburg houseowners in town and county to register voluntarily the value of their houses and other buildings with the state Fire Office. Minimum value was set at 50 *Reichsthaler*. The rates were set on a sliding scale. For each 100 Rthlr. of declared value the rate was set at 12 *Groschen* for the first year, 6 Gr. in the second and third years, 4 Gr. in the fourth and fifth years, and 3 Gr. in succeeding years.[9] Registration of value had to be made prior to 1 January 1706. From the treasury secretary the registrant would receive a receipt filled in with the details of declared value. This receipt in effect was the subscriber's contract or policy given to him upon payment of his annual premium. For this receipt the registrant was required to pay a fee of 6 *Pfennig* per 100 Rthlr. declared value (.02 per cent) the first time, and 3 Pf. for each renewal. These fees served to pay the salaries of the Fire Office and treasury officials, thus placing the Fire Office on a self-sustaining basis without touching the premium money.

[7] Certain marked distinctions between the early development of fire insurance companies in England and Brandenburg may be noted. Basic was the distinction between the private undertaking and enterprise that marked the English concerns and the form of state socialism found in the first Brandenburg companies. One advantage accruing to the peoples of Brandenburg from this distinction was that fire-fighting was not left to individual enterprise and competition as advertising build-up. The state likewise sponsored and regulated the acquisition of the latest and best fire-fighting machines, their proper maintenance and manning in case of fire, and offered the advantage of this protective apparatus to all citizens equally. It will also be noted that subscription to the English concerns was voluntary and that membership in the Brandenburg company became compulsory for all houseowners, a factor, it will be discovered, in its undoing.

[8] Mylius, No. 9, Cols. 173–176.

[9] Taking the value of a *Reichsthaler* at $0.75, and one *Groschen* at 1/24 of a Rthlr. or about $0.03, and ignoring the almost impossible task of converting a 1700 Rthlr. into 1957 value, the scale of rates would appear to have gone from about 50 cents per $100 in the first year to 12 cents per $100 in the sixth year.

Rural registrants who could not get to Berlin were allowed to register their declared value with the local magistrates, pay premiums to them, and ultimately receive their treasury receipts through them.

Before registration all buildings were to be appraised, or the owner might employ documents to establish the cost of the house. To assure greater care on the part of the owner for fire prevention, a one-third deductible clause was introduced.[10] That is, an owner could declare only two-thirds of the appraised value or cost, assuming one-third of the risk himself.

As soon as a house or building burned down and this circumstance was properly certified by the local magistrate, the owner was to receive from the Fire Treasury Office within eight weeks the whole sum for which he declared value. If only part of the building was damaged, local authorized persons would appraise the damage and payment would be made accordingly.

Because of the still inadequate means of fire-fighting at the time (although fire-fighting facilities in Berlin were among the best in Europe) and because of the combustible building materials used, it was sometimes necessary to tear down a neighboring house to prevent spread of the fire. The owner of such a house was to be paid just as if the house had burned. In either event, burning or wrecking, the owner was to receive payment only after he furnished assurance that the insurance money would be used for rebuilding.

Persons who by personal negligence [11] or greed for money caused a fire in order to collect insurance not only were denied payment but were to be punished severely.

This announced insurance project was made voluntary for the citizens in 1705, but the uninsured were warned to expect no help of any kind. Those who assisted in extinguishing fires by carrying water or by operating the manual fire pumps were to receive a small compensation from the Fire Treasury funds. And for anyone who was permanently incapacitated or killed while fighting fire, provision was made in the Regulation for the payment of a pension either to the firefighter or his widow.

A further provision was made in 1705 that a proprietor who insured his house might also insure his furnishings and personal belongings, including livestock. This provision for insurance of

[10] It is interesting to note the presence of a two-thirds loss clause and a three-quarters value clause in fire insurance in America today.

[11] E.g., failure to observe the fire-prevention measures required of all citizens by various fire ordinances. Foul chimneys were a common example of neglect.

personal property would disappear after 1711, not to appear again until 1812.

To encourage proprietors to invest in fire insurance two protective guarantees were made by the Elector of Brandenburg.[12] No money received as fire indemnity could be attached for debts or for any other reason, but must be used for reconstruction. And Frederick gave his word and that of his successor that no fire insurance money would be used for any other purpose than that for which it was collected. He guaranteed that the Fire Insurance Treasury would remain an independent treasury, whose directors would wisely invest its receipts so as to increase the treasury's value by earned interest.

Less than a year later, on 1 June 1706, the Regulation instituting this form of state socialism was slightly modified.[13] A standard insurance rate was set at 3 Gr. per 100 Rthlr. or about 1.25 per thousand of declared value. No one was to be ineligible because of religion, class, or personal status. Baronial properties, churches, schools, and hospitals were made exempt from insuring requirements. For all other proprietors in the territory of Brandenburg fire insurance for buildings was now made compulsory. In the cities, proprietors were required to declare value at a minimum of one-third of the appraised value and could declare as much as two-thirds. The one-third deductible provision was retained.

It seems reasonable to assume that there was considerable reluctance on the part of proprietors to buy insurance and to register their property with the state's Fire Insurance Office. This may explain the lowering of rates and the compulsory feature introduced in 1706. Later that same year, on 15 October 1706, a Circular Order [14] was issued to the county commissioners (*Landräte*) and city officials to the effect that all houses and buildings were to be appraised by them according to instructions attached to the Order. A model form likewise attached was to be used for the appraisal report. This report was to include the year, the city, town or village, the street, the county, the name of the proprietor, the actual appraisal value, and the insurance declaration. These reports were then to be filed in the Fire Office in Berlin. On threat of a fine of 500 *Reichsthaler* the county commissioners working in the rural areas were ordered to appraise each and every house in baronial jurisdiction (i.e., in

[12] Frederick I was Elector of Brandenburg but in 1701 had been elevated in dignity to the title of King in Prussia, one of his many other territories. The insurance project of 1705 affected only his Brandenburg territory.

[13] Cf. "General Fire Insurance Regulation," Mylius, No. 10, Cols. 175–182.

[14] Mylius, No. 11, Cols. 181–190.

the villages on the estates of the nobles), to collect the insurance premiums semiannually, and to proceed with warrants of execution against negligent owners.

Thirty months after this first fire insurance project had been established, the King complained that there had been many objections made to his fire insurance program, that many had ignored his mandates and had worked secretly to undermine the project.[15] Moved by the traditional paternal concern for the welfare of his people,[16] Frederick I reasserted his original Regulation establishing the Fire Office, and gave the delinquents for the year 1707 until 1 June 1708 to make their payments of premiums into the insurance treasury. These premiums were doubled as a means of punishment.

The most serious resistance to the compulsory insurance had come from the nobles, who deprecated the whole idea of an insurance fund. On their feudal estates were many villages occupied by serfs and peasants who worked or rented the lands of the nobles. Because of this resistance the King, by the Mandate of March, 1708, granted that the serfs of a noble landowner (*Gutsherr*) might be exempt from premium contributions to the Fire Insurance Treasury, but under certain conditions. If a nobleman's serf or peasant suffered loss from fire, the nobleman would immediately help rebuild the peasant's cottage, bring his fields back into cultivation, and would not attempt to annex the peasant's holdings. Other king's subjects would not assist in the reconstruction, the injured party would get no free tax years, building materials, etc., from the county treasury. If other royal subjects or neighbors suffered damage because of the fire, the nobleman must pay for the damage. And, finally, all those who did not register their houses in the beginning would have to pay double for the elapsed years whenever they wished to get insured.

If there was need to justify the wisdom of setting up a fire insurance program for the protection of the king's subjects as well as the

[15] "Mandate Concerning the Royal Prussian General Rural and Urban Fire Insurance Office, of 21 March 1708," Mylius, No. 14, Cols. 213–216.

[16] While the Hohenzollern rulers did feel a deep paternal responsibility for the welfare of their subjects, the principal motive behind the fire insurance project was to assure speedy reconstruction of houses and buildings in cities, towns and villages throughout Brandenburg. Beginning with the Great Elector (1640–1688), the Hohenzollern had launched on a program of expansion after The Thirty Years' War which was to make Brandenburg-Prussia a major state in Germany and a rival of Austria in the eighteenth century. Many immigrants were invited to settle in Brandenburg, villages were restored after the great war, cities and towns were built up in size with development of industry and commerce. The ravages of fire could easily set back this development program. Relief from taxes and grants of aid from the state were insufficient to assure immediate reconstruction. Reconstruction was necessary if Brandenburg-Prussia was to continue her economic growth and expansion. So the state went into the fire insurance business to spread the risk and to make reconstruction capital available in the event of catastrophe.

material interests of the state, an unhappy event occurring in the summer of 1708 demonstrated how valuable such protection could be. The city of Krossen on the Oder River was almost completely burned out. A royal ordinance of 2 August 1708 [17] concerning the rebuilding of the city reported that all houses and buildings within the city walls were completely burned down. The directives for the rebuilding of the city provided first of all that the Fire Office was to pay out of its treasury to the citizens and residents of the city the sum of 70,000 *Reichsthaler*, in proportion to the declared value of each building, with a one-third payment to be made immediately. In addition the king ordered a ten-year exemption from all tolls and excise payments, a contribution of 202 cords of building timber from the royal forests, building lime, bricks, and other building materials. To rebuild the uninsured churches, schools, parish and school houses a special collection was to be taken up from churches in all the royal lands.

Unfortunately, the large sum of insurance indemnity ordered paid to the fire victims of Krossen was not available. Due to peculation the treasury was empty.[18] This scandalous situation produced a loss of confidence in the Fire Office and weakened the effort to establish the idea of fire insurance on a practical basis. Further efforts to undermine the insurance program came from the rural areas, where the officials responsible for collecting insurance premiums and fines and for making up claims reports were not forwarding these to Berlin. The county commissioners were frequently the nominees of the country gentry and lent their support to the general resistance to the fire insurance project of the king.[19]

In 1709 [20] and again in 1710 [21] the king was compelled to repeat his warning that if the nobility chose not to insure the homes and buildings of their peasants and serfs they must foot the bill of reconstruction out of their own means in the event of fire.

[17] Mylius, No. 16, Cols. 217–224.

[18] Brandenburg-Prussia in 1708 was in a serious financial predicament because of the mismanagement and embezzlement of various treasury funds by two scheming court favorites who syphoned out of all special treasuries into the household treasury whatever funds were available, without concern for the future. The Fire Insurance Treasury was completely devoid of funds in 1708 in spite of the royal promise of 1705 that the insurance premiums would not be used for any other purpose. This embarrassing situation served to discredit the king's effort to establish a fire insurance program for his territory. See Hans Prutz, *Preussische Geschichte* (Stuttgart, 1900), Vol. II, pp. 335 336.

[19] Cf. Mylius, No. 17, Cols. 223 226 for a "Patent Concerning Punishment of Those Who Are Negligent in Turning in Money Collected for the Fire Insurance Treasury of 31 August 1708."

[20] "Edict Concerning Various Points Connected With the Fire Insurance Treasury of 20 March 1709," Mylius, No. 22, Cols. 231–234.

[21] "Patent Concerning the Nobility and Their Subjects' Houses and Buildings Which Are Not Registered With the Fire Office of 28 March 1710," Mylius, No. 23, Cols. 235–236.

It is probably not surprising, in the light of the open resistance of the nobles, the connivance of many enforcement officials, the lingering effects of the treasury scandal of 1708 and the weak character of Frederick I, that the king yielded and decided to abolish the Fire Office and to abandon his general fire insurance program, at least for the Mark of Brandenburg. In a Rescript of 17 January 1711 [22] the king informed his subjects that because of the unrelenting complaint and lamenting in all his counties he was compelled to suspend the Fire Insurance Treasury and to abolish the Fire Office.

Thus ended rather ignominiously after less than five years' experience the first effort to introduce into Brandenburg a fire insurance company. The failure of the first Fire Office in Brandenburg might be attributed ostensibly to the resistance of the nobility in the rural areas. A more fundamental objection underlying this rural opposition was the compulsory feature. Proprietors in cities and towns, with greater business acumen, with more progressive ideas, with greater attunement to the great risks involved when fire broke out in the cities, with more awareness of the disasters which had occurred, and with much higher property investments at stake, might have been expected to support a voluntary program. Fire offices or insurance companies in England and Scotland, working on a voluntary basis, did not languish but waxed numerically and in volume of underwriting from their inception in the late seventeenth century. However, it was not part of the Hohenzollern theory of a paternalistic welfare state to leave much to the voluntary action of the king's subjects.

The failure of the first Fire Office in Brandenburg was merely the failure of an institution but not of an idea. This first venture served as a prelude to the real development on a permanent basis of fire insurance companies in the Kingdom of Prussia. The principal features of organization, policies, requirements, rate schedules, and so forth, could be borrowed and applied anew. The experience was not in vain, and it is probably safe to say that if the fire loss at Krossen in 1708 had been compensated for from a full treasury, the Fire Office of 1705 not only would have been fully vindicated but would not have been abolished.

In an effort to salvage something from the abortive first effort, about a year after the abolition of the territorial Fire Office, on

[22] Mylius, No. 25, Cols. 235–238.

2 May 1712,[23] a local fire indemnity fund was ordered established for the capitol city of Berlin alone.[24] Residents were ordered to register the value of their houses and to make contributions to a local indemnity fund. There is no evidence that this effort was effective. The time was not yet ripe.

In 1713 a new king, Frederick William I, came to the Prussian throne. Thrifty, personally parsimonious, careful guardian of the state's finances, he severely punished graft, peculation, and inefficiency and restored the confidence of his subjects in the integrity of his treasuries. In 1718 Frederick William launched a new and successful effort and a new plan for sharing the risk of fire loss which was to produce a number of public fire insurance companies whose institutional life was to survive until the twentieth century.

A Reglement of 29 December 1718[25] declared that there had been numerous requests for a mutual indemnity society. The king therefore "ordained and approved" that a general society was to be instituted, to be composed of the proprietors of houses in the capitol cities and suburbs (i.e., Berlin). This society came to be known as the *Städtische Feuersozietät von Berlin*, the City Fire Society of Berlin. This was at first less a fire insurance company than a mutual fire indemnity society requiring no payment of premiums by its members. Any member of the society who was a fire victim would be indemnified or compensated by contributions from the other members. All houses and buildings were to be appraised and registered in a land register. In the event of fire causing loss to any one of them the other owners must contribute according to the amount of appraised damage on the basis of each 100 Rthlr. of listed valuation of their own houses. Each owner was to be given a receipt showing what the obligation of his house would be in case of damage worth 2,000 Rthlr. The share of risk for each owner would of course be reduced as the number of registered houses increased. It was provided that as new houses were built and listed on the land register the directors of the society would have to make biennial adjustments in the obligated share of each owner-member.

The salaries of appraisers and clerks, and the costs of notification

[23] "Notification That Each Resident in the Capitol Cities Appraise His House and Record It in the Fire Register So That in Case of Fire Damage He May Benefit in Proportion," Mylius, No. 26, Cols. 237–238.

[24] Berlin had grown from a city of about 8,000 in 1648 to a metropolitan capitol of the expanded Brandenburg-Prussian Kingdom with a population of about 57,000 in 1710. Elaborate and strict fire prevention measures had been taken, over the previous fifty years, to protect the capitol against destruction from fire. But if loss from fire should occur it was urgent in the plans of the Hohenzollern that reconstruction should suffer no delay.

[25] "Reglement Concerning the Operation of a General Society in the Capitol Cities for Protection Against Fire Damage," Mylius, No. 30, Cols. 249–254.

chits were to be paid out of the fines collected from those who had chimney fires or who violated the fire-prevention ordinances in some other way. The state chartered or instituted the society, established the regulations under which it would operate, underwrote the expenditures of the society and through the society was the instrument which collected and disbursed the indemnity contributions.

The Reglement defined fire damage as including the actual fire damage to a house, the damage or loss to a neighboring house by necessary wrecking to check a fire, and damage to fire-fighting equipment. Compensation for the latter was to be on the basis of cost of repair. The first two types of damage would be appraised by a committee of four appointed to represent the interests of proprietors and the citizenry, and was to be augmented by four carpenters and four masons. Loss appraisal could not exceed the original appraised value of the burned house.

It was stipulated that the assessed obligations were to be paid out by the directors within three to four weeks after the fire. Except that if the damage was high, e.g., more than 5,000 Rthlr., the directors were authorized to make two levies, at a three-months interval to ease the burden on the members. Anyone who defaulted or refused to make his assessed payment was to be constrained by action of the *Krieges-Hof-und Criminalgericht*,[26] a military and criminal court in Berlin having jurisdiction among other things over criminal and fiscal affairs. The Commandant of the city garrison when called upon to enforce the writ of execution upon the delinquent was authorized to provide the necessary soldiers. The defaulter was required to pay all the costs of the enforced collection. As previously specified by the first Fire Office, it was ordered that no indemnity money was to be paid out unless the fire victim put up bond to assure that the money would be used for reconstruction.

The renewed effort to establish some form of fire insurance was again a compulsory one. This time it was successful and endured, in part, presumably because it applied only to a city population where there might be expected a clearer recognition of the need and value of such protection. The edict of establishment had, in fact, referred to public requests for just such protection.

In the next five years the example of the City Fire Society of Berlin was followed by three other similar societies in the Province of Brandenburg, in the city of Stettin, and in the Province of East

[26] For a description of this court see Reinhold A. Dorwart, *The Administrative Reforms of Frederick William I of Prussia* (Cambridge, 1953), pp. 84–85, 92.

Prussia.[27] These public fire insurance societies or companies were successful and permanent and were the forerunners of a continuous development of public, mutual, and joint-stock companies, insuring both real and personal property in the following three centuries.[28] In turn they were carrying on a pattern and a tradition of providing fire insurance protection for the citizens of the state established by the abortive and earliest Fire Office of 1705–1711.

[27] *Feuersozietät der Provinz Brandenburg* (1719), *Stettiner Öffentliche Feuerversicherungsanstalt* (1722), and *Feuersozietät für die Provinz Ostpreussen* (1723).

[28] See Bulau, *op. cit.*, pp. 245–247 for interesting illustrations of the fire marks used by these Brandenburg-Prussian fire offices.

By Lance Edwin Davis
ASSISTANT PROFESSOR OF ECONOMICS
AT PURDUE UNIVERSITY

Stock Ownership in the Early New England Textile Industry*

¶ *The unique features of ownership patterns in the early New England textile industry have long been recognized. Hitherto it has been the interlocking or horizontal relationships that have been studied. This article deals, instead, with the vertical pattern — describing ownership in terms of occupational groupings of all the investors rather than the kinship of the dominant owners. Conclusions are drawn in respect to such important points as the principal sources of textile capital, the rate of mercantile capital reinvestment in manufacturing, the relationship between investment and industry integration, and the increasing importance of nonbusiness and institutional vested interests.*

Students of American economic development have generally agreed that the New England cotton textile industry, and particularly that portion characterized by the large "Massachusetts Type" mills, was the first branch of American industry to feel the full impact of the industrial revolution.[1] In 1800 few American firms produced textiles; but by 1860 cotton manufacturing represented a capital investment of over $65 million in the six New England states alone.[2] Since capital was far from abundant in ante-bellum Amer-

* The author wishes to express his thanks to his colleagues at Purdue University – and in particular Professors Irving Morrissett, Jared Sparks, and Duncan McDougall – for their help and advice on matters of both content and grammar. Moreover, the author wishes to acknowledge the aid of the Department of Political Economy of The Johns Hopkins University and of the Purdue Research Foundation that together financed the research on which this paper is based.

[1] Students of the period divide textile producers into two categories. The small single-operation mills that were the American heirs to the English development are termed Rhode Island Type mills. These firms are typified by the Slater enterprises near Providence, Rhode Island, and by the development at Fall River in Massachusetts. The Massachusetts Type is the name given to the large integrated mill that grew out of the development of the Boston Manufacturing Company at Waltham, Massachusetts.

[2] The Census of Manufactures in 1860 reported that total capital in cotton textile production in the United States amounted to $93,143,759. Of this amount more than two-thirds ($65,947,819) was invested in the six New England states. The total estimated capital in all industry in the entire U.S. was $1,009,855,715. Thus New England textiles represented about 7 per cent of the total. These official figures probably underestimate the total actual investment. United States Secretary of the Interior, *Manufactures in the United States in 1860* (Washington, D.C., 1865), pp. 679, 735 and 742.

ica, the process by which this relatively large sum was accumulated and mobilized is an interesting subject for analysis.

A recent study of the large "Massachusetts" mills has shown that the sale of equity was the most important single source of finance. This examination of firm records indicates that sale of stock provided the mills with almost all of their original finance; and, even after the firms had been in existence for a quarter century, the study shows that contributed equity still represented over one-half of their total capital.[3] Still unanswered, however, are two basic questions: who were the stockholders, and from what sources did they garner the funds that they invested in the textile industry? This study attempts to provide at least partial answers to these questions.

The answers are based on the records of eleven cotton textile mills of the "Massachusetts Type": the Amoskeag, Boston, Dwight, Cabot, Perkins, Hamilton, Nashua, Lyman, Lawrence, Lancaster, and Massachusetts Cotton Mills. Analyses were made of the stockholder records of these firms for the date of the original stock subscription and for the fourth and ninth years of each decade in the period 1829–1859. The fourth and ninth years were chosen because more stockholder records were available for these years than for any other five-year intervals; but even so, the records are incomplete. However, the records for every selected year are complete for at least two firms up to 1839, and for at least six firms thereafter. Table 1 shows the firms and years for which information is available, together with the total value of their outstanding stock.[4] Although the survey was limited to stockholders who, at some time during the period, had investments of $2,500 or more in the industry, this restriction resulted in the exclusion of less than one-fifth of the total value of the equity (see Table 2).[5]

The company records listed the stockholders only by name and

[3] Lance E. Davis, "Sources of Industrial Finance: The American Textile Industry, A Case Study," *Explorations in Entrepreneurial History*, Vol. IX (April, 1957), pp. 190–192.

[4] The figures displayed in Table 1 represent the par value of *all* outstanding stock, and no allowance has been made for purchases at prices above or below the par value nor has any attempt been made to deduct the shares received as stock dividends. The paucity of data on stock prices as well as the complexity of stock transactions make it all but impossible to adjust the figures for price changes. At the same time, without stretching the facts very far, stock dividends can be looked at as voluntary reinvestment in the business, since the typical stockholder then had much more to say about dividend policy than does the average stockholder today. The mill records, from which these figures and other data in this article come, are on deposit in the manuscript collection of the Baker Library, Graduate School of Business Administration, Harvard University.

[5] If the occupational composition of the small stockholders differed greatly from that of the large purchasers the conclusions may be subject to some revision; however, a spot check on the small investors in particular mills does not seem to show any marked departure from the pattern established by the large investors.

city of residence, and it was necessary to obtain further identification from city directories, university alumni records, local histories, and other similar sources. These chronicles provided information about the occupation and business connections of most stockholders, but they seldom identified the sources of their invested wealth. Lacking better information, it was assumed for the purposes of this analysis that the invested capital originated in the occupation in which the buyer was engaged at the time of his purchase, or, in the case of retired persons, in the last occupation in which he was engaged prior to his retirement. In a few instances in which the actual sources of capital were known, this arbitrary assumption proved to be reasonably realistic.[6]

The Stockholders

The Mercantile Groups

The most important and numerous group of stockholders were nontextile merchants purchasing shares in their own name, or, less commonly, in the name of their firm. In all, some 234 nontextile merchants and 17 nontextile mercantile firms owned shares in one or more of the eleven firms; however, the importance of the individual contributions within this group varied greatly. Its membership ranged from individuals whose holdings totaled a bare $2,500 on the one hand to persons whose personal investments ran as high as $200,000.

Over the period studied, the average investment per nontextile merchant per firm remained remarkably constant while the average total investment per merchant in the eleven firms rose slowly from $11,000 to $17,000.[7] However, the *proportion* of equity held by this group has a very different pattern. This ratio rose between 1829 and 1834, from about 30 to almost 40 per cent, then declined steadily throughout the remainder of the period. By 1859, these merchants owned less than one-quarter of the equity included in the sample. The relative distribution of shares owned by these merchants and by other occupational groups is shown in Table 6.[8]

[6] Throughout this article, major dependence is placed on four measures of contribution. First, the relative proportion of the total equity that was held by the members of each occupational group included in the survey. Second, the relative proportion of the total number of stockholders represented by each group included in the survey. Third, the average investment *per stockholder per firm* for each occupational group. And fourth, the average *total* investment of the individual members of each occupational group in the eleven firms. Some reliance is also placed on the estimates of total absolute contribution as displayed in Table 3; the reader should bear in mind that the latter are estimates only.

[7] See Tables 4 and 5.

[8] Estimates of the *absolute* amounts of equity owned by each of the occupational groups

Not only do the nontextile merchants bulk large among stockholders in each of the cross-section years, but also they appear to have made a substantial contribution to new equity. The group subscribed to over one-third of all new issues; and, although their average investment per firm was only $11,600, the average individual investment was in excess of $16,000. Nor did their contribution to new issues diminish perceptibly over time. As late as 1854 this mercantile group contributed 32 per cent of the equity capital of the newly organized Lyman Company.

In many ways the textile merchants represent the most interesting single group.[9] They are set apart from the other merchants not only by the size of their investments, but also by their investment motives. While other merchants could look at textile stock as only one more of a series of investment alternatives, the textile merchants must also have seen such investment as a method of securing their raw material sources.

During the entire period, only 45 textile merchants and 7 textile firms were identified among the stockholders included on the sample; however, their contribution to textile finance was far out of proportion to their numbers. Only once during the entire period did this group represent more than 8 per cent of the total number of investors; but during the middle years of the survey their holdings represented about 16 per cent of the total equity.[10] During the 1830's their holdings rose from 6 to 18.5 per cent of the total stock surveyed; but after 1840 their importance gradually diminished; and in 1859 they owned only 7 per cent. Although the records show an increase in the number of textile merchant owners during the 1830's, this increase was small; and the group's increasing importance among occupational groups can be traced almost entirely to the increasing size of the individual merchant's investments. In 1829

---

are shown in Table 3; they are less reliable than the estimates of proportionate shares shown in the text, because of the problems created by the changing number of firms and incomplete data. Most of the discussion of capital contributions has, therefore, been limited to the proportions of equity contributed. The estimates in Table 3 are based on the eight firms for which there are records for more than one-half the selected years. Data missing for these firms were estimated by a method based on Yates' "missing plots" technique. See F. W. Yates, "The Analysis of Replicated Experiments Where Field Results are Incomplete," *The Empire Journal of Experimental Agriculture*, Vol. I (1933), pp. 129–142. From the information displayed in Table 3, it appears that the decline in mercantile holding referred to above was only a *relative* decline caused by the industries' equity issue increasing more rapidly than the merchants' holdings. (Possibly for no other reason than that the number of merchants was increasing less rapidly than the population in general.) The estimates of absolute contribution show that the mercantile holdings increased in every year (except 1854) from 1829 to 1859.

[9] Since only those merchants who could positively be identified as trading primarily in textiles are included, the category probably underestimates the actual contribution of this group.

[10] See Tables 6 and 7.

the average investment of textile merchants in each firm was less than $11,000; ten years later, however, this figure had more than doubled (see Table 4). Even more striking is the rise in the average investment per individual. In the same period this figure increased by almost 200 per cent, from $12,800 to $36,800 (see Table 5). Similarly, the post-1844 decline in the importance of the textile merchants' investments can in large part be attributed to a fall in the average investment per individual. By 1859 the average textile merchant held equities totaling only about $20,500, and in each mill he had less than $16,000.[11]

In new issues, too, the textile merchants made a contribution far out of proportion to their small numbers. Although the group represented only a little more than 8 per cent of the new stock purchasers, they purchased about 17 per cent of the new equity issues. Moreover, the average investment of each purchaser in the new issues of the mills was in excess of $35,000.

If the eleven firms studied here are typical of the large "Massachusetts Type" mills, this analysis tends to substantiate the belief that a large portion of the equity capital of the early American textile industry was drawn from mercantile sources. However, the same evidence casts some doubt on several corollary assumptions that are often made about the causes and nature of this transfer from mercantile to industrial investment.

An examination of the contribution of the entire mercantile sector attests to the importance of trade-born capital in the financing of American textiles. The mercantile groups together contributed over one-half of the original equity and represented over one-third of the total holdings in almost every cross-section year.[12]

Most writers have recognized the importance of mercantile capital, but many have attributed the transfer of capital from trade to industry almost entirely to the declining returns in commerce that followed the post-Napoleonic depression.[13] Although such a decline may have triggered the first capital emigration, the evidence suggests that such a decline is not a satisfactory explanation of the continued transfer. While the stock holdings of the nontextile mercan-

[11] If the estimates in Table 3 are correct, the reduction in the importance of textile merchants after 1839 represents not only a relative but also an absolute decline in their holdings. The table shows an increase in the holdings until 1844, but after that date there appears to have been an absolute withdrawal of capital amounting to $355,000 by 1859.

[12] The total contribution of the two groups fell below one-third of the total surveyed only in 1859.

[13] See, for example, Victor S. Clark, *History of Manufactures in the United States 1607–1860* (New York, 1929), Vol. VI, p. 367; or Caroline Ware, *The Early New England Cotton Manufacture* (Boston, 1931), p. 141.

tile groups declined in relative importance over the period, the estimates of their total contributions to equity capital (Table 3) indicate that the absolute size of these holdings continued to increase, at least until 1860. Moreover, similar steady increases in the number of investors and in the average size of the individual's investment also seem to indicate that the transfer was not a short-run phenomena induced by a sudden sharp decline in commercial profits, but, instead, a long-term process lasting at least until the Civil War.

Undoubtedly, declining profits provided some impetus to *push* capital from trade, but it is difficult to ignore the *pull* supplied by the high expected profits and the supposed safety of textile investment. If the decline of the returns to investment in trade had been the only cause of the transfer to industrial capital, it is reasonable to assume that an increase in commercial profits would have caused a withdrawal of merchants' investments in industry and a reinvestment in trade, or at least a cessation of new transfers from trade to industry. But it appears that mercantile capital continued to flow into textile production even during periods of commercial prosperity.[14]

Although high expected profits may be largely responsible for the transfers of mercantile capital to the textile industry during the 1830's, some other factor must be adduced to explain the continued flow during the 50's when textile profits were low and the expectation of future prospects dim.[15] It appears likely that this flow can, in part, be explained by the merchants' search for a reasonably safe investment that did not require their personal attention rather than an investment chosen to maximize their short-run monetary profits. Except for the issues of railroads (never known for their safety), private bonds were largely unknown; and, aside from the flotations of railroads, commercial banks and textiles, there were few available equity issues. Thus, since men of wealth were usually prohibited from investing in Savings Banks and Trust Companies, the only investment alternatives aside from textiles that combined safety and impersonality were the bond issues of government bodies – and these were often rather unrewarding and at times not even safe.

[14] Although no precise estimates of the returns from trade do exist, such returns are probably loosely correlated with the volume of trade, for which some evidence does exist. See, for example, Walter Buckingham Smith and Arthur Harrison Cole, *Fluctuations in American Business 1790–1860* (Cambridge, 1935), pp. 73 and 104.

[15] An examination of the records of the nine firms possessing adequate financial data (Amoskeag, Dwight, Cabot, Perkins, Hamilton, Lancaster, Lawrence, Lyman, and Mass. Cotton) show that profits (as a per cent of total capital stock) average 10.3 per cent from 1830 to 1834; 9.4 per cent from 1835 to 1839; 6.8 per cent from 1840 to 1844; 12 per cent from 1845 to 1849; 6.1 per cent from 1850 to 1854; and 6.0 per cent from 1855 to 1859.

Finally, the evidence indicates that the transfer process cannot be correctly described as a flight of capital from trade to industry. No doubt some merchants withdrew completely from trade and invested large portions of their fortunes in industry; however, the evidence suggests that this was not the usual case. Instead, it appears that the merchants only gradually withdrew their funds from trade and transferred them to industry. Table 5 shows that the merchants' average investment increased gradually through the period, and an examination of the accounts of individual stockholders also confirms the gradual nature of their investment.

The investments of the textile merchants appear to have rested on the three legs of profits, wealth, and economic control. Before 1820 textile merchants were largely engaged in the import and sale of foreign cloth, and, as a result, the merchants were not particularly concerned with the infant textile industry. As the industry grew, however, established merchants shifted from foreign to domestic goods and new merchants entered the domestic field. Profits were frequently large and capital began to accumulate in the hands of those merchants specializing in the sale of American goods. At the same time, two forces combined to draw the group's capital into the manufacture of textiles. In the industry's early years the large mills were highly profitable. Because of their close association with textile manufacture, the textile merchants must have been able to recognize this profitability and have been in a position to subscribe to the new equity issues.[16] Moreover, the merchants must have realized that their own prosperity depended on a continued supply of finished cotton. Although no direct evidence can be marshaled to support the belief that textile merchants attempted to cement their sources of supply by investment in textile production, indirect evidence makes this conclusion seem reasonable. The records show that members of textile mercantile firms invested much more heavily in those mills served by their firms than they did in the remainder of the eleven mills. Moreover, studies of the structure of the early textile industry have shown that most of the original Massachusetts Type mills were established as noncompetitive operations with each mill specializing in one particular textile product.[17] Since the textile merchants were faced with an almost monopolistic group of mill

[16] The stock subscriptions were usually first opened to the friends and associates of the original promoters and public sale was atypical.

[17] Other evidence of the noncompetitive market structure is found in the continual exchange of cost, price and labor information that passed between the mills. For a full discussion of the industry's organizational structure see Vera Shlakman, *Economic History of a Factory Town; A Study of Chicopee, Massachusetts* (Northampton, Mass., 1935).

suppliers, it seems reasonable to assume that the necessity of maintaining a source of supply must have dictated their investment in textiles.

The high profits of the mid-forties brought many new firms into the industry; and entry apparently did much to reduce the strength of the forces that had combined to draw the capital of textile merchants into the mills. The influx of new firms drove profits below the returns in alternative investments. The textile merchants, because of their position, should have been among the first to sense the effects of increased competition. At the same time, entry caused increased sales competition among the mills and reduced the merchants' need for ties of ownership to maintain their sources of supply. The result was a withdrawal of capital by the textile merchants.

Financial Institutions

Among the records of stockholders appear the names of 35 commercial banks, 7 savings banks, 5 fire and marine insurance companies, 5 brokerage firms, 2 private banks, 1 life insurance company, and 1 trust company. Two conditions set these financial intermediaries apart from the other occupational classes. First, since these institutions often served only as intermediaries, the true capital source remains partly obscured; and, second, the intermediaries apparently acquired their holdings for a wide variety of reasons. Although no exhaustive study of motivation is possible, it appears that the insurance companies purchased equity as a permanent part of their investment portfolio; that at least some of the commercial and savings banks acquired their holdings in the process of loan creation (i.e., the shares were signed over to them as collateral or they were received in partial payment of the forfeited loans); and that the brokers frequently purchased their shares for resale.[18] Despite this variety of motives, these financial institutions did provide capital, either directly (through the deliberate investment of their own or their customers' funds) or indirectly (by permitting individuals to hypothecate stock and thus invest in the industry without forfeiting their other enterprises).[19] In its ultimate effect there is little difference between direct and indirect investment. In the for-

[18] The records of the New England Mutual Life Insurance Company make it very clear that stock was purchased as a part of the investment portfolio. Conversely, the records of the Provident Institution for Savings and the Massachusetts Hospital Life Insurance Company (a trust company) show that almost all of their holdings arose out of loan creation.

[19] In the period under consideration, the hypothecation of stock resulted in ownership passing temporarily into the hands of the lender. The firm records, then, show the lending firm as the registered stock owner until the loan has been repaid and title again passed to the original owner.

mer case, the intermediaries make a direct capital grant to the recipient firm. In the latter, the institution interposes an added guarantor (the borrower) between itself and the capital recipient. Thus potential investors who otherwise would be forced to hold surplus funds in liquid reserves are allowed to invest in industrial equity. For these investors know that the intermediaries would be willing to convert equity shares into liquid reserves by substituting their capital for the funds of the investor if the need should arise. The history of the Massachusetts Hospital Life Insurance Company provides evidence of the importance of indirect lending. While the Mass. Hospital never purchased textile equity as a permanent earning asset, the company did, as a result of its loan policy, become the registered owner of a large quantity of the issues of the eleven firms. In no cross-section year did that institution hold less than $80,000 in stock in the eleven companies, and in 1854 the holdings totaled $390,500.

Just as the motives for shareholding of these financial intermediaries differed from those of the merchants, so the pattern of their investment also differed markedly from that of the mercantile investors. Although these intermediaries accounted for a sizable share of the equity in every cross-section year, the group made only a small (2 per cent) contribution to original sales. Moreover, despite the evidence of substantial fluctuation, there appears to have been no significant trend in their relative contribution, their relative importance among the total number of stockholders, the average investment per firm, or in the average size of the individual institution's investment.[20]

That the relative holdings of the financial intermediaries did not increase despite the rapid increases in the size and numbers of these institutions, can probably be traced to two related circumstances. First, only the insurance companies purchased textile stock as a permanent part of their portfolio; and, although their rate of growth was high in the two decades before Lincoln's election, their absolute size was never large. Thus, the majority of the textile shares held by the group reposed in the hands of the trust companies and the commercial and savings banks — institutions that acquired their holdings in the course of their loan activities. And, although these latter institutions were rapidly increasing their loans during the 40's and 50's, this expansion was occurring in real estate and

[20] See Tables 4, 5, 6, and 7.

personal security loans and not in loans on intangible securities.[21]

Although the five-year cross-sections do not permit a complete analysis of cyclical fluctuations, some evidence suggests that the intermediaries' holdings may have been affected by fluctuations in business activity. In 1834 (a year of panic) and in 1844 (after a prolonged depression) the relative contribution of the financial institutions fell precipitously (see Table 6).[22] Since these fluctuations are more pronounced in the holdings of the commercial and savings banks than they are in the portfolios of the other financial institutions, they probably reflect shifts in loan policy induced by deteriorating business conditions.

Financiers

Persons engaged in financial enterprises appear on the textile companies' books as stockholders almost as frequently as financial institutions. The sample yields the names of 59 persons who could be termed financiers; these include 19 commercial bank officers, 17 officers of insurance companies, 15 brokers, 4 trust officers, and 4 private bankers.

Although the proportion of stock held by these financiers was only about two-thirds that held by the textile merchants, over time the two series appear to have moved closely together. The relative contribution of the financiers rose from 6 per cent in 1829 to almost 11 per cent ten years later. After that date, the trend was reversed, and the ratio displays a gradual decline reaching 6 per cent again in 1854.[23] Unlike the movements of the textile merchants' holdings, the fluctuations in the relative importance of financiers can be attributed both to changes in the relative number of investors and to changes in the average investment of each individual.[24]

The contribution of the financial group to new equity issues did not diverge far from the pattern of their holdings in a typical cross-section year. They purchased about 9 per cent of the new equity included in the survey, and their individual investments in these new issues averaged slightly over $16,000.

[21] See, for example, the balance sheets of the Provident Institution for Savings and the Massachusetts Hospital Life Insurance Company. In the case of the Provident Institution, security loans declined from $472,445 in Dec., 1840, to $37,500 in Dec., 1858.

[22] The estimates of absolute holdings (see Table 3) also seem to bear out the contention that there is some relationship between the holdings of this group and the state of business activity. Both 1834 and 1844 show a sharp drop in the absolute holdings of the financial institutions.

[23] See Table 6. The estimates of absolute contribution also show a pattern similar to that established by the textile merchants. Table 3 shows an increase until 1844 followed by a reduction in the succeeding years (except for an increase in 1859).

[24] See Tables 5 and 7. Interestingly enough, however, there appear to have been no regular movements in the average size of the investment per firm (Table 4).

These figures seem to indicate that the financiers were as aware of the actual levels of profit as were the textile merchants. The financiers' entry coincides closely with the years of high profits, and their exit follows swiftly on the heels of declining profits.[25] It is not difficult to believe that the "men of money" would be acutely aware of the industry's true profit prospects, and that these men would not be bound to textiles by any nonprofit considerations. However, their apparent re-entry in the late 50's is more difficult to rationalize. It may have reflected some astute guesses about the proximity of hostilities coupled with an awareness of the profit potential of the textile industry in wartime.

Out-of-State Contributions to Equity

In the entire study, no characteristic stands out more plainly than the almost total absence of foreign capital. Even if the category "foreign capital" is used to include all non-Massachusetts investors, the contribution is insignificant.

Among the stockholders included in the survey were 59 persons who did not live in Massachusetts and 2 firms whose offices were outside the Commonwealth. Of the 59 out-of-state stockholders, 7 were residents of foreign countries, 29 were Nashua and Amoskeag owners residing in New Hampshire, and 27 did not live in either Massachusetts or the state in which their mills were located.[26] The two out-of-state businesses were Paddleford and Far, the Savannah cotton house, and Baring Bros., the English private bankers.

Until 1839 no out-of-state owners can be identified on the list of stockholders; and, although their importance gradually increases during the ensuing twenty years, by 1859 they owned only slightly more than 2 per cent of the total equity surveyed. The individuals in the group seldom held stock in more than a single firm and their average investment ($5,500 to $7,300) was lower than that of any other class.

Nor was the out-of-state group important in the financing of new firms. Of the nine new issues included in the survey the out-of-state group subscribed to only .3 per cent (.003).

Although foreign capital made significant contributions to other sectors of the American economy, the textile industry appears to have drawn little direct benefit from this source. The 7 alien holders (3 Englishmen, 3 Germans, and 1 Canadian) subscribed to no new

[25] See footnote 15.

[26] The Nashua and Amoskeag were located in New Hampshire, while the other nine firms were located in Massachusetts.

stock issues, and holdings of the largest investor never exceeded $16,000.

Today the corporate form of business is often thought of as an instrument designed to depersonalize capital and thus free it of its geographic ties; however, there is nothing in the pattern of equity ownership of these early mills that would attest to the importance of that feature.[27] The dependence upon local capital is so strong that it seems to suggest that the location of the early textile industry in New England might be traced not only to immobile labor and power sources but also to the existence of a substantial quantity of immobile capital.

Women and Trustees

Although accounts held in the name of women or trustees were rare in the industry's formative years, maturity brought with it increased participation by these two groups.[28] Their individual investments remained small; but each succeeding survey included a greater number of their accounts; and, by 1859, women and trustees together held almost one-fourth of the total shares surveyed (and, of course, this is one-quarter of a much larger total).[29]

A comparison of the records of the individual firms shows that the increase in the importance of women and trustees was linked not only with the passage of time, but also with the age of the firm. The two groups appear earlier and become important sooner in the three older firms (the Boston, Hamilton, and Nashua) than they do in the remaining eight mills. Moreover, the contribution of the women and trustees was important in the original financing of only one mill – the Lyman – and here the new issue did not represent a voluntary purchase of shares, but merely a substitution of shares in the new mill for those in an already-established enterprise (the Hadley Falls Company).

In her excellent monograph on the New England textile industry, Miss Ware has attributed the rising proportion of holdings of women and trustees to the industry's high profits and increasing stability

[27] Nor for that matter does the corporate form even appear to have freed capital from personal ties in the Boston area. The records show that most stockholders regularly attended meetings and took an active part in the direction of the firm's activities. Their comments make it clear that many felt that their companies were as much their personal property as their own partnerships and sole proprietorships.

[28] The estimates of absolute contribution show a steady increase throughout the period (see Table 3).

[29] There is no way of estimating the number of estates that are represented by the trustee figures. The stockholder records most frequently list the trust account under the name of the trustee (followed by the note "trustee"), and the same persons often served as trustees for several estates.

that made investment appear both safe and lucrative.[30] While there is no certain method of verifying this hypothesis, some evidence indicates that at least a part of the increase can be attributed not to voluntary investment by widows and orphans, but to the deaths of the original investors and the distribution of their estates, including textile shares, to their heirs.[31] An examination of the women listed on the individual stockholder accounts indicates that well over two-thirds of the new women holders had the same surname as men who had previously held shares but whose names had ceased to be listed. Furthermore, the notation "widow of ." not infrequently followed the name of the new shareholder. In a few cases, the trustee accounts carried the notation "Josiah Quincy trustee for Paschal Pope." In these cases, investigation usually showed that Paschal Pope had held stock in the company in an earlier year. Finally, the fact that the size of the women's and trustees' holdings were related to the age of the firm (as well as the historical year) also supports the view that inheritance helped determine ownership. If safety and profitability had been the cause of the increased investment, the investments should have moved into all firms in the same chronological period. If, however, the stock were acquired by inheritance, the women and trustees could be expected to appear first in the oldest firms, since the owners of older firms could be expected to die earlier than the owners of newer companies, on the average. An examination of the holdings by firms does in fact show a marked positive partial correlation between firm age and women and trustee holdings.

Other Groups

Little industrial capital found its way to the textile industry through investment by persons earning a living in nontextile manufacturing. In the 30-year span, 71 such persons (31 artisans, 27 managers and officers in manufacturing companies, and 13 owners of manufacturing companies) and 1 manufacturing company held stock in one or more of the 11 mills. However, their holdings represented only about 5 per cent of the total. They typically invested only a small amount and in only a single concern, and they did not increase their relative contribution over the period.

The failure of the nontextile industrial group to increase its rela-

[30] Caroline Ware, *The Early New England Cotton Manufacture*, pp. 122 and 148.

[31] Even if the original stock had been acquired through inheritance, it would still be possible to argue that continued ownership implied a belief in the safety and profitability of the investment. However, in the absence of a well-defined equity market, it is safe to infer that often the legatees could dispose of their shares only at a substantial loss.

tive share appears as something of a surprise. Given the industrial development that marked the first half of the century, it appears reasonable to expect manufacturing capital to have become more important as the period progressed. That this did not occur, indicates, perhaps, that manufacturing wealth did not increase more rapidly than the accumulation of capital in the economy as a whole; or, perhaps, in the later years falling profits caused a withdrawal of capital from textiles that offset the increase that otherwise would have occurred; or, perhaps most likely, almost all industrial capital was reinvested in the business in which it originated.[32]

The 100 professional persons who owned stock in the 11 firms made a greater contribution than the nontextile industrialists, but their proportionate share of holdings declined over the period, from 12 to 7 per cent.[33] However, if the estimates of absolute capital are reliable, the decline does not indicate a withdrawal of capital, but merely a rate of increase lower than the rate of the industry's expansion.

Summary and Conclusions

Recent studies have indicated that the sale of equity shares provided the American textile industry with most of its original capital. This study utilizes the records of 11 Massachusetts Type textile mills to trace the source of the equity capital. These records, supplemented by local histories, city directories, and university alumni records, served to identify the majority of the stockholders by occupation. A comparison of the holdings of the occupational groups at five-year intervals permitted an estimate of the trends in the relative importance of each group to be made; and, in addition, it provided some insights into the investment behavior of the members of each group.

If the 11 firms were typical of the early cotton manufacture, mercantile wealth appears to have been the most important single source of textile finance – at least one-third of the total in every year except 1859. The evidence also suggests that the shift from mercantile to industrial capital was a slow process, with merchants only gradually withdrawing their funds from trade and investing them in industry. Moreover, although the first movement of capital from trade to in-

[32] If the equity figures had been disaggregated and those shares representing stock dividends assumed to represent reinvestment in textiles, the figures would show a substantial increase in industrial capital during the 1840's.

[33] The 100 included 60 lawyers, 19 doctors, and 21 judges, ministers, dentists, and teachers.

dustry may have been instigated by a decline in trading profits, the transfer process appears to have continued even during periods of mercantile prosperity.

During the 1830's, textile merchants were by far the heaviest investors in the textile industry. This propensity to invest can probably be attributed to their knowledge of, and close contact with, the textile manufacturing firms, and to their need to assure a source of domestic supply in a market that was not yet very competitive. During the 1840's textile merchants withdrew their capital from textile production. The withdrawal apparently resulted from falling profits in textile manufacture coupled with increasing competition among manufacturers.

Even in the industry's formative years, a significant portion of its equity shares was held by financial intermediaries; but despite the rapid growth in the resources of these financial institutions, there appears to have been no sustained increase in the proportion of equity supplied by them.

Unlike some other young industries of the ante-bellum period, New England textiles received only a negligible amount of capital from abroad and very little from other parts of the country. Although the equity holdings of non-Massachusetts owners increased with time, even at the end of the period they represented only 2 per cent of the industry's capital. In the entire period only 7 aliens held stock in one or more of the firms; and the total holdings of the largest investor among the 7 never exceeded $16,000.

Over the period, the most significant increases in ownership are recorded for women and trustees. Although these two groups held almost no shares in 1830, by 1859 they accounted for almost one-fourth of the total. The evidence suggests, however, that the increases can be attributed not to the positive attractions of textile investment, but to the natural processes of death and inheritance.

TABLE 1

TOTAL VALUE OF STOCK OUTSTANDING [a]

(in thousands of dollars of par value)

	First Year	1829	1834	1839	1844	1849	1854	1859
Amoskeag	$ 965			$ 988	—	$3,000	$3,000	$3,000
Boston	100	$600	$ 600	600	$ 600	540	450	450
Dwight	—				—	—	700	1,700
Cabot	400			—	—	—	[b]	
Perkins	360			—	—	—	1,000	[c]
Hamilton	—	—	—	—	1,200	1,200	1,200	1,200
Nashua	—	600	—	750	800	1,000	1,000	1,000
Lyman	1,470						1,470	1,470
Lawrence	1,200		1,200	1,500	1,500	1,500	1,500	1,500
Lancaster	100				117	—	—	—
Mass. Cotton	1,200			—	1,200	1,800	1,800	1,800

[a] Blank spaces indicate firms were not in operation: dash (—)indicates no stockholders' lists were available.
[b] Cabot merged with Perkins, 1852.
[c] Perkins merged with Dwight, 1856.

TABLE 2

VALUE OF CAPITAL STOCK OWNED BY STOCKHOLDERS INCLUDED IN THE STUDY

(in thousands of dollars of par value)

	First Year	1829	1834	1839	1844	1849	1854	1859
Amoskeag	$ 895			$ 950		$2,292	$1,862	$1,947
Boston	100	$474	$ 448	428	$ 390	381	343	308
Dwight	390						627	1,662
Cabot	354							
Perkins	348						937	
Hamilton					1,008	840	856	773
Nashua		600		692	755	776	861	862
Lyman	1,408						1,012	1,227
Lawrence	1,240		1,095	1,169	1,091	994	1,022	1,027
Lancaster	85				111			
Mass. Cotton	1,040				994	1,413	1,366	1,306
Per cent of total included in the sample	.946	.896	.857	.844	.803	.741	.733	.752

TABLE 3

Estimated Value of Total Equity Contributed by Various Occupational Groups to Eight Cotton Textile Firms

(*in thousands of dollars*)

	1829	1834	1839	1844	1849	1854	1859
Merchants & Merc. Firms (excl. Textile)	$637	$1,237	$1,443	$2,315	$2,921	$2,744	$3,006
Textile Merchants & Tex. Merc. Firms	108	411	979	1,192	1,124	872	837
Manufacturers, Artisans & Mfg. Firms	180	112	237	249	347	483	648
Professional Persons	326	349	575	764	813	791	876
Misc. Persons & Firms	1	20	28	103	80	181	222
Financial Institutions	308	203	537	270	742	902	854
Financiers	99	183	572	756	657	629	976
Foreign Persons & Firms [a]	0	6	24	76	146	322	265
Women	49	93	94	292	436	588	742
Trustees	30	140	314	704	1,219	1,676	2,003
No Occupation	77	223	236	273	316	449	520
No Information	221	203	475	581	933	932	1,170

[a] Includes all non-Massachusetts residents.

TABLE 4

Average Investment per Stockholder per Firm, by Occupation of Stockholders

(*in thousands of dollars*)

	First Year	1829	1834	1839	1844	1849	1854	1859
Merchants & Merc. Firms (excl. Textile)	$11.6	$10.9	$12.8	$11.5	$11.3	$17.2	$12.2	$12.8
Textile Merchants & Tex. Merc. Firms	20.0	10.7	22.1	23.2	20.2	19.7	17.1	15.5
Manufacturers, Artisans & Mfg. Firms	7.9	14.5	16.0	11.8	6.9	9.4	11.2	10.5
Professional Persons	8.9	10.8	10.4	9.7	9.1	9.4	7.5	8.8
Misc. Persons & Firms	6.1	0	9.0	7.0	5.2	4.8	8.2	8.4
Financial Institutions	7.4	21.4	25.5	24.1	9.2	14.6	12.7	15.8
Financiers	11.0	12.0	8.4	14.9	7.2	11.2	13.0	16.5
Foreign Persons & Firms [a]	5.5	0	0	5.3	7.3	5.6	7.0	6.9
Women	6.1	7.5	9.5	4.5	8.4	6.8	7.9	7.2
Trustees	9.4	7.7	5.9	12.5	6.8	10.1	9.6	9.0
No Occupation	9.1	7.8	11.4	9.9	6.4	9.0	9.5	11.6
No Information	7.1	8.2	10.1	8.8	6.8	7.5	6.6	7.4

[a] Includes all non-Massachusetts residents.

TABLE 5

Average Total Investment per Individual Included in the Study, by Occupation

(in thousands of dollars)

	First Year	1829	1834	1839	1844	1849	1854	1859
Merchants & Merc. Firms (excl. Textile)	$16.3	$10.9	$13.3	$14.6	$14.7	$17.6	$16.7	$17.4
Textile Merchants & Tex. Merc. Firms	35.7	12.8	31.6	36.8	32.1	28.9	24.5	20.5
Manufacturers, Artisans & Mfg. Firms	8.3	14.5	16.0	12.2	6.9	9.4	11.2	10.5
Professional Persons	12.1	10.8	12.0	12.3	13.5	12.9	10.6	12.3
Misc. Persons & Firms	12.2	0	9.0	7.0	6.3	7.7	15.4	16.9
Financial Institutions	7.4	34.2	25.5	30.7	11.6	21.3	24.6	28.2
Financiers	16.1	12.0	10.1	23.8	25.4	17.2	17.6	23.9
Foreign Persons & Firms [a]	5.5	0	0	5.3	7.3	5.6	7.0	6.9
Women	8.1	7.5	9.5	4.5	9.6	7.8	8.4	7.9
Trustees	9.4	7.7	5.9	12.3	6.8	10.3	9.6	9.0
No Occupation	11.0	7.8	11.4	19.9	8.1	9.0	10.2	11.6
No Information	7.1	7.2	10.1	8.8	6.8	7.6	6.6	7.7

[a] Includes all non-Massachusetts residents.

TABLE 6

Percentage Distribution of Equity Holdings by Occupational Groups

	First Year	1829	1834	1839	1844	1849	1854	1859
Merchants & Merc. Firms (excl. Textile)	.360	.299	.393	.347	.300	.299	.276	.248
Textile Merchants & Tex. Merc. Firms	.166	.062	.142	.185	.163	.120	.080	.068
Manufacturers, Artisans & Mfg. Firms	.051	.085	.021	.055	.025	.032	.050	.054
Professional Persons	.105	.121	.100	.103	.111	.085	.076	.072
Misc. Persons & Firms	.009	.000	.017	.004	.014	.008	.014	.018
Financial Institutions	.020	.167	.066	.095	.041	.076	.077	.070
Financiers	.089	.059	.064	.107	.100	.066	.059	.080
Foreign Persons & Firms [a]	.003	.000	.000	.004	.010	.015	.027	.022
Women	.008	.015	.024	.012	.047	.043	.055	.061
Trustees	.045	.022	.041	.055	.089	.123	.155	.166
No Occupation	.031	.038	.072	.044	.029	.031	.043	.043
No Information	.112	.130	.059	.088	.070	.099	.088	.096

[a] Includes all non-Massachusetts residents.

TABLE 7

Percentage Distribution of the Number of Shareholders by Occupational Groups

	First Year	1829	1834	1839	1844	1849	1854	1859
Merchants & Merc. Firms (excl. Textile)	.322	.298	.379	.285	.258	.198	.227	.203
Textile Merchants & Tex. Merc. Firms	.085	.064	.079	.104	.074	.071	.047	.047
Manufacturers, Artisans & Mfg. Firms	.066	.064	.016	.044	.034	.034	.045	.053
Professional Persons	.137	.181	.118	.129	.120	.104	.102	.086
Misc. Persons & Firms	.015	.000	.008	.007	.025	.019	.018	.023
Financial Institutions	.028	.085	.032	.052	.080	.060	.061	.047
Financiers	.083	.053	.095	.092	.069	.068	.046	.051
Foreign Persons & Firms [a]	.006	.000	.000	.011	.014	.031	.040	.033
Women	.012	.000	.032	.033	.053	.073	.071	.089
Trustees	.049	.032	.087	.059	.126	.141	.163	.193
No Occupation	.035	.053	.079	.059	.044	.042	.046	.039
No Information	.160	.170	.071	.133	.099	.151	.134	.137

[a] Includes all non-Massachusetts residents.

TABLE 8

Number of Persons Included in the Sample by Occupation

	First Year	1829	1834	1839	1844	1849	1854	1859
Merchants & Merc. Firms (excl. Textile)	147	28	46	60	89	114	153	131
Textile Merchants & Tex. Merc. Firms	31	5	7	18	22	28	30	31
Manufacturers, Artisans & Mfg. Firms	41	6	2	12	20	23	41	47
Professional Persons	58	17	13	29	35	44	67	54
Misc. Persons & Firms	5	0	1	2	9	7	9	10
Financial Institutions	18	5	4	11	15	24	29	23
Financiers	37	5	10	16	17	26	31	31
Foreign Persons & Firms [a]	4	0	0	3	6	18	37	29
Women	8	2	4	9	21	37	61	71
Trustees	32	3	11	16	57	80	150	170
No Occupation	19	5	10	8	15	24	39	34
No Information	104	16	9	36	45	87	123	115

[a] Includes all non-Massachusetts residents.

BOOK REVIEWS

Roads, Rails, and Waterways: The Army Engineers and Early Transportation. By Forest G. Hill. Norman, University of Oklahoma Press, 1957. Pp. vii + 248. $4.00.

One of the most colorful and inspiring periods of our nation's history – the conquest of the vast western interior – is covered in this book. It is the story of the U.S. Army Engineers from about the year 1800 to the period immediately prior to the war between the states – a half century of rigorous living and tremendous demands upon a small dedicated group of technically trained military engineers from the newly established Military Academy at West Point.

The discussion is devoted to the details of the establishment of West Point and the utilization of the graduates of this institution in the filling of the many urgent demands for the exploration and surveying of the vast unchartered interior west of the New England and East Coast States. There is compiled, in a relatively small volume, a vast amount of data which should impress students of history. The excellent bibliography serves as a valuable reference and should stimulate further study of an important phase of our country's development. It is known personally that there is a wealth of detailed and fascinating information available in the dusty old files, documents, memoranda, and logs of the early officers of the Army Engineers; however, to compile information from these sources requires patience and diligence. The author is to be commended for the many tedious hours entailed in gathering, from these brittle and deteriorated records, the material for this book.

Many readers will be interested to know that the first Corps of Engineers was organized on June 16, 1775, by General George Washington. Although this Corps was disbanded in 1783 at the end of the Revolutionary War, the Corps of Engineers, as it is known today, has had a continuous existence since its re-establishment by the Act of March 16, 1802. This new Corps of Engineers (also referred to as the Engineering Department, U.S. Engineers and Army Engineers), which was directed to be stationed at West Point, devoted its early attention almost solely to coastal defense and to the Military Academy. After the War of 1812 there were multiplied demands for coastal defense installations, also public interest in the exploration and development of the untouched interior of the nation. The book deals with the challenges confronting the leaders of this new government and the officers of the U.S. Army who had received engineering training.

It seems apparent from the author's discussion that the hand of the federal government was needed in accelerating the development of the roads, canals, waterways, and railroads along feasible and desirable lines. He covers at some length the scarcity of engineering talent during this period; and the fact that labor, capital funds and entrepreneurial initiative were more plentiful than engineering ability. Accordingly, in order to supply an

urgent need for engineering manpower, the federal government recognized and authorized the Corps of Engineers as the appropriate federal agency for promoting internal improvement.

Economists may be interested in the author's statement in the chapter "Beyond the Call of Duty" that the planning which the government attempted through its army engineers was intended to aid national defense and stimulate economic expansion through positive measures to improve transportation. He states further that the plan was to encourage private as well as public undertakings in the field of internal improvements and thus to provide conditions facilitating general economic growth. "The objective was clearly that of guiding economic development through fostering conditions beneficial to business enterprise."

Quite frequently the reviewer is asked, "How did the Army Engineers get into this business of constructing river and harbor, flood control, and related civil works projects?" This book answers this question in detail by describing the origin and early activities of the Army Engineers; the firm establishment of the initial school of technology and engineering in the United States at West Point and the development of the high ethical standards and codes of conduct at the Academy under General Sylvanus Thayer; the passage of the General Survey Act of 1824 under which authority the cadets upon graduation from West Point were assigned surveying and engineering duties pertaining to the development of post roads, canals, railroads, rivers, harbors and related improvement work of a national interest; the basic philosophy of the Army Engineers and their desire for comprehensive planning and for accomplishing of new and difficult jobs regardless of the hardships involved; and the effective role played by this branch of the service, together with civilian engineers in exploring, mapping and collecting of meteorological, geological, zoological, botanical and geographical data which spearheaded the winning the West.

In the chapters, "Working with the Railroads" and "Railroad Progress" the author furnishes considerable detail relative to the development of early railroads. He states that this was a field in which Army Engineers gave far-reaching encouragement to the internal improvement movement. Interesting information is contained in the book of the surveying and engineering work in connection with the Baltimore and Ohio, Charleston and Hamburg, Baltimore and Susquehanna, railroads in New England and the "Railroad from the Valley of the Mississippi to the Pacific Ocean."

It is noted that there is a degree of repetitiveness in the book. Restatements of substantially the same information appear several times; however, this repetition did not detract materially from the readability of the book. Actually it aids in fixing the dates and incidents in the mind of the reader.

This is a book that will interest every cadet and graduate of the U.S. Military Academy; and also the engineers and other employees of the Corps of Engineers currently engaged in river and harbor, flood control, and related water resources development work. It should be read by all engineers, as well as students of history, who are interested in the

profound contributions made by the military and civil engineering profession in the advancement of engineering science and the development of the resources and transportation systems of these United States.

MELFORD E. MONSEES

U.S. Army Corps of Engineers

• • •

Lloyd's of London: A Study in Individualism. By D. E. W. Gibb. New York, St. Martin's Press, 1957. Pp. ix + 387. $5.00.

Why certain firms succeed and others fail cannot always be clearly determined or adequately explained. This should not serve as a deterrent to the business historian in his never-ending attempts to illuminate the causes and conditions making for business success or failure. Often by studying the experiences of single (sometimes also singular) firms or institutions, one can unearth information that is helpful in this general area. Lloyd's of London is a prime example of a singular institution. D. E. W. Gibb, the author of this latest history of Lloyd's, is well equipped for his task by virtue of his fifty years' experience working for the organization and his thirteen years as a member of Lloyd's Committee, its governing body. The volume is a distinguished addition to the group of histories delineating Lloyd's past. It is possibly the best one published thus far from the point of view of illuminating the reasons for the astonishing success of this institution. Illustrative of its material well-being, in 1956 Lloyd's collected a premium income, net of commission, of a record $681,520,000, which was one-third of the total nonlife business of all British insurance. Between 1913 and 1936, the aggregate premium income of its members was doubled, and between 1936 and 1947 it was trebled.

Anyone familiar with the past of this august body in the City of London rich in tradition and in historical memories is aware that Lloyd's was not always a symbol for success in insurance underwriting and unimpeachable credit. It had its humble beginnings about 1688 or 1689 in the coffee house on Tower Street owned by Edward Lloyd, of whom relatively little is known. Merchants, shipowners, journalists, and others interested in the shipping trade congregated here in their spare time to carry on marine underwriting in a more or less casual manner.

Often a firm develops in a fitful and irregular manner, and important reforms are sometimes produced to meet a temporary emergency. Not a few times did this happen at Lloyd's. In the early stages of its development, there was a loose association among the frequenters of the coffee house. The decision to move in 1771 to new quarters in Pope's Head Alley, in the words of the author, "gave the death blow to Lloyd's as a propietary coffee-house and assured its future as a self-governing body" (p. 47). For it led to the election of a committee and the payment of a subscription. Moreover, the cost of moving to the new premises and

furnishing them came to £ 15 per man. For nearly half a century, the institution fee for new entrants was £ 15. It was perhaps a little strange and certainly illogical to set the entrance fee at £ 15 because of the original cost of fitting up the rooms in the new premises in Pope's Head Alley. Nevertheless, this was characteristic of Lloyd's and thoroughly British.

Another occasion on which a temporary emergency produced important reforms occurred in 1811. As a result of a general meeting on March 29 to consider the charge that the Committee had withheld vital intelligence from the underwriters, a general reorganization was precipitated. At three general meetings in July and August, 1811, it was agreed that candidates for subscribership should be subject to strict regulation and the amount of subscription increased. The Trust Deed of 1811, giving the regulations legal sanction, was to be signed by all subscribers, present and future. By 1863, some 1,600 subscribers had affixed their signatures to the deed. As time elapsed, it was found to be insufficient to allow enforcement of the bylaws under it, and was found defective in a number of other material respects. In May, 1871, Lloyd's Act, providing for incorporation of Lloyd's, was enacted by Parliament. While it has statutory powers to make its own bylaws, acquire real as well as personal property, and perform all acts in the corporate name, it is to be noted that Lloyd's, in its role as a corporation, does not conduct the business of insurance. This is done solely by the members, each of whom is legally liable in respect of his clients under Lloyd's policies up to the full extent of his own resources.

The Committee has played an important role in the day-to-day operations of the organization. One of Lloyd's staff is said to have remarked, when asked to define the meaning of Lloyd's, "Individually we are underwriters, collectively we are Lloyd's." The Committee is the guardian of the general interests of the underwriters, the instrument through which decisions are made for collective action and for determining the over-all policies of the body. It formulates rules and regulations to which members conform with a view to fostering their own interests and benefiting those they insure.

The development of the powers of the Committee was a slow but steady process. Along with a growing sense of corporate responsibility on the part of the members of the Committee were the increasing tasks that they performed. At first primarily a gathering of underwriters interested only in underwriting problems, by degrees the Committee evolved into "an administrative body controlling a large premises and a difficult staff, but still watching closely the technical interests of underwriters. Then very slowly under a new compelling sense of common interest, the Committee takes on the additional task of disciplining the members and protecting the good name of the whole body" (pp. 114–115). It appointed Lloyd's agents throughout the world and thus enabled Lloyd's to gain the reputation of being the world's clearinghouse of shipping intelligence. The publications it fostered were consulted in shipping circles throughout the world. In short, to the Committee must go much of the credit for the prestige attached to Lloyd's.

Lloyd's generally has been fortunate in the quality of the men serving on the Committee, their willingness to work hard, and their loyalty to the organization. This undoubtedly is one important reason for the ability of the group to meet difficult situations successfully.

The author subtitles his work "a study in individualism." It is true that Lloyd's is a unique society in that it probably is the only one in the world in which individuals perform underwriting on a large scale. To stress the virtues of individualism is, therefore, not beside the mark. It is necessary, however, to emphasize that an unrestrained individualism is not an unmixed blessing. The evils flowing from it often have spelled disaster for many firms. That Lloyd's also suffered from the ravages produced by an individualism unchecked, uncurbed, and unreined is undeniable. The burgeoning powers of the Committee and its effectiveness in restraining such disastrous individualism certainly are important factors making for success of the institution.

The growth of a feeling of social-mindedness among the membership, reflected as it was in the increase of the powers of the Committee, was visible in the successive steps taken by the group to assure the security of a Lloyd's policy. The first measures to effectuate their purpose were faltering and tardy, but, when seen in proper perspective, a necessary precondition for the more effective steps taken in later years. At first, insolvent underwriters were excluded, and measures were adopted to prevent weaker members from slipping unnoticed into insolvency. Continuing losses inflicted upon the insured by virtue of the insolvency of various underwriters necessitated stronger steps.

At present, the precautions in force to protect the policyholders are quite adequate. In a pamphlet published by the organization entitled "A Sketch of the History of Lloyd's" (1957), the following is a succinct summary of these safeguards (pp. 4–5):

1. Every Lloyd's Underwriter is liable for his underwriting debts to the full extent of his means, and he is required to lodge with the Committee of Lloyd's security by way of Deposit consisting of approved securities and/or cash the amount of which varies according to the volume of the underwriting business in which he proposes to engage.

2. The whole of the premiums received by an Underwriter must under the provisions of the Assurance Companies Acts, 1909 and 1946, be placed in a Trust Fund to be used exclusively for the payment of his underwriting liabilities and expenses, and ascertained profits only can be released to the Underwriter, and then only with the consent of the Trustees.

3. Every Lloyd's Underwriter must submit his Accounts to an annual audit on a basis laid down by the Committee of Lloyd's and approved by the Board of Trade under the Assurance Companies Acts, 1909 and 1946.

The ability to endure hard times and to come through unscathed and perhaps even strengthened by the experience, for an institution as for an individual, spells fitness and probable success. Lloyd's passed through periods where its membership was decreasing, its leadership deteriorating, and the business transacted declining. Its willingness to rid its ranks of incompetence and corruption, where these existed, and its flexibility

and adaptability were important reasons for its success in weathering economic storms.

Contributing in no small measure to the well-being of the group was its courage in experimenting with and adopting what it considered to be desirable innovations. This is not to say that such innovations were readily accepted by all of its members. True individualists that they were, various of the underwriters showed considerable stiff-necked resistance to developments and changes which time proved to be most desirable. Nevertheless, this did not deter the organization from putting into effect innovations, some of which were far-reaching in character. One example of an outstanding innovator was Cuthbert Heath. The author corrects a common misconception, even repeated in Lloyd's official pamphlet summarizing its own history, that Heath introduced fire insurance at Lloyd's. In this connection, Mr. Gibb notes (p. 162):

As far back as the eighteenth century fire risks were placed at Lloyd's on property both at home and abroad; and the business came to a temporary end only because of high taxation on fire policies, collected by a method to which Lloyd's underwriters could not adapt themselves.

However, Heath did revive fire insurance at Lloyd's. Finding novelty an attraction, not a deterrent, Heath went on to introduce burglary and employees' liability at Lloyd's. Individual underwriters also first introduced motor and aviation insurance and experimented with various types of these policies. Many other types of nonmarine insurance were transacted on the premises of the organization. In 1911, Parliament enacted a second Lloyd's Act, making insurance of every description the proper province of Lloyd's. The transaction of nonmarine insurance was a vast operation, tremendously increasing its premium income. It had indirect effects in broadening the authority of Lloyd's and promoting the growth of the big underwriting syndicate. Both of these developments have been beneficial to the business.

Lloyd's expansion overseas, especially in the United States, in the fire and accident branches and its extensive reinsurance business in many countries in the world, is a remarkable story yet to be definitively narrated. In the teeth of hostile legislation, local prejudice, and fierce competition, it was able to forge ahead in its overseas business through sheer competence and the superior quality of the service rendered, its ability to adapt itself to difficult local conditions, and its bulldog-like tenacity.

One noticeable gap in the book is the failure to discuss, in more or less detail, the formation and activities of the important trade associations that the members of Lloyd's formed to protect and advance their interests. It is somewhat odd that a history of the organization should have scant reference to such groups, whose role in the furthering and advancement of the various types of nonlife insurance was so significant, whereas a more general work, such as W. A. Dinsdale's "History of Accident Insurance in Great Britain," contains much more material on these associations.

Gibb's study is not annotated and there is no bibliography. For an

institution such as Lloyd's, where there is undoubtedly room for a considerable amount of further research, this is unfortunate. The business historian especially would be interested in knowing what sources in Lloyd's archives were utilized. The author seldom refers specifically to them.

The work is a well-written and forceful combination of exacting scholarship and eminent readability. The author writes in delightful and charming style, and has a considerable talent for drawing analogies, especially in Biblical terms, which illuminate an historical situation so clearly that a nonhistorian has no difficulty whatsoever in grasping it readily. Here is one example: "In the matter of war risks underwriters began to tell each other what Adam told Eve as they left the Garden of Eden, 'my dear we are living in an age of transition'" (p. 221).

Long considered by the English people as a national institution, Lloyd's has a most interesting history which is inextricably interwoven with that of English and world history. If it be true that each generation rewrites its own history in accordance with the prevalent climate of opinion and in response to its peculiar needs, one can quite readily visualize historians in each generation bringing up to date and reinterpreting the history of Lloyd's. It is to be hoped that these future histories will be as well written as the work under review.

HARRIS PROSCHANSKY

Bronx, New York

• • •

The Daniel Shaw Lumber Company: A Case Study of the Wisconsin Lumbering Frontier. By A. R. Reynolds. New York, New York University Press, 1957. Pp. 177. $5.00.

Here is another product of the business historian's labors which can be carried in one's coat pocket without causing the bearer to list perilously to either port or starboard. The excellent beginning made by the New York University Press with the publishing of Theodore Marburg's 116-page *Small Business in Brass Fabricating: The Smith & Griggs Manufacturing Company of Waterbury*, now has been continued with publication of a fitting companion volume on one of the myriad middle-sized business enterprises which were born figuratively in a log cabin, weathered a multitude of frontier hazards of life, achieved success and good reputation, contributed considerably to the development of the community and region it served, and then very quietly and unspectacularly died for want of two necessary ingredients of the family lumber business of its times – a male heir and stumpage.

The author is a professor of history at Colorado State College and made the preliminary investigations for this study while a research assistant with the Forest Products History Foundation, an organization established by historians and lumbermen to promote research and writ-

ing in the field of lumber history. Mr. Reynolds has produced exactly what his title implies, a case study of the Wisconsin lumbering frontier. He succinctly sets forth how a State of Maine lumberman, Daniel Shaw, migrated to New York and then to Wisconsin in the 1850's, obtained prime forest lands along the Chippewa River, built a sawmill, logged, river-drove his logs, milled lumber and shingles, rafted and sold his products in the Upper Mississippi River Valley market. Despite desperate credit conditions and capricious nature, Shaw and his brother-in-law, Charles A. Bullen, built a business which expanded with the growing demand of the prairie state farmers for the straight-grained, easy-to-work, white cork pine. When Daniel Shaw died in 1881, his son Eugene took over the business and directed its management through the difficult period of the decline of the white pine industry and the shift to use of hemlock and hardwood species.

This work depends in the main upon rich collections of Shaw Papers in the Eau Claire Public Library and the Minnesota Historical Society and is buttressed by a diligent scholar's wide perusal of unpublished manuscripts, government documents, newspapers, periodicals, books and pamphlets. It has particular value for the light it sheds upon the conditions under which lumbering was so wastefully carried on during the heyday of the industry in the Lakes States region. It is no apologia for the so-called lumber baron. The Shaws' sins of omission and commission are plainly stated. Mr. Reynolds has produced a book which helps to illuminate the history of the exploitation of a natural resource which for more than half a century has been very muddily related by the muckrakers and a dedicated band of conservationists.

When Joyce Kilmer penned the line of poetry, "But only God can make a tree," he articulated an emotional, quasi-religious attitude toward trees which has been a *cause celebre* for most of this century. But it was not ever thus. For most of our history prior to the turn of the century, trees were looked upon as an endless resource, the things we seemed to have most of, a barrier to settlement and the use of the precious land and a rich source of tax revenue. It was only when the great coniferous forests of the Lakes States began to dwindle in the 1890's that there was heard in the land any very substantial cry for conservation of the forest resource. This realization that there was an end to the virgin forests of Michigan, Wisconsin, and Minnesota, and a recognition of the terrible waste which characterized the lumber industry of Shaw's day provided great impetus to the conservation movement. When in the nineties a tiny sprinkling of young American foresters began to return from European schools, the wealthy, dynamic Gifford Pinchot, emerged as the leader and prophet of those who saw most vividly the need for forest conservation and wise forest management. That the late Mr. Pinchot succeeded in awakening the country to its need is a fact established beyond question. What is not so well known is that he had a tremendous amount of help in the accomplishment, a great deal of it from those who had the most to gain from forestry, the lumbermen and other users of forest land. That these people came to recognize their own faults and sought intelligent means

of correcting them is very often overlooked. The reader of "The Daniel Shaw Lumber Company" who is acquainted with the literature of the conservation movement may be tempted to conjecture what wholesome influence for good a book of this kind might have had upon the development of good forest management in this country if it had been produced and circulated in 1912 when the company ceased to exist and when the political bonfire over conservation was beginning to blaze with great heat but with distorting light.

This book has faults but they are small ones and are far outbalanced by many virtues. The author's style is lucid but it is marred by short lapses of unnecessary summary and awkward transitions which more careful editing might have eliminated. Footnotes are in the main well handled, and a fine index adds to the book's value. The author rather too frequently cites standard texts on logging and lumbering with regard to details which have become well known, yet he fails to footnote more obscure things such as the Shaw family formula for an antifriction alloy used to extend the life of mill machinery (p. 87). Probably because of the nature of the work the author does not give the Shaws or any of their associates any clear form as individuals. Foresters may question Mr. Reynolds' statement (p. 149) "several thousand board feet of each tree's valuable trunk lumber" were wasted by cutting trees high on the stump. Hundreds of board feet but not "thousands" would be more accurate. But these are small quibbles with a book which in few pages sets a fine pattern for others interested in writing business history. Outstanding is its description of rafting; its explanation of the sometimes involved and often devious ways of financing; its tracing the changes in marketing practices which led the company from supplier of lumber to a purely local market to one supplying a widening wholesale and retail market in the Upper Mississippi Valley, and finally to one serving a broad market extending from the Rockies to the Atlantic; its revelation of the company's part in helping its local community and state to win gradual economic independence from Eastern capital. Scholars of railroad and banking history will find this book a welcome addition to their libraries for what it reveals of their special fields of study.

Mr. Reynolds' book provides one type study of the Lakes States lumber industry to which it is hoped others representing other forested regions may soon be added. Not until these are done will it be possible to write a definitive history of lumbering in America.

ELWOOD R. MAUNDER

Saint Paul, Minnesota

• • •

And the Price is Right. By Margaret Case Harriman. Cleveland and New York, The World Publishing Co., 1958. Pp. 318. $4.00.

Business historians continually search for new material to add to a considerable historical void. *And the Price is Right* is a disappointment to those who expected a critical analysis of America's biggest department store. But the author admits that her book is not the scholarly or definitive work for which she gives Ralph Hower credit (page 64). However, it is even less than that. In fact there seems to be a special effort made to keep the story from becoming too "serious." Not even the most casual reader is given a fair chance to understand more than a fraction of what made Macy's into America's biggest department store. The early parts of the book hint at this but never quite get all the facts laid out. Macy's is made rather to seem a by-product of the great success of several very smart people without telling how they were smart or where their decisions paid off for the store. It seems obvious that Mrs. Harriman's mission was to entertain in the tradition of good clean fun.

The book is good clean fun and "nobody but nobody" (a Gimbel's slogan) can object to this. *And the Price is Right* is obviously designed for that group of readers who shop the store and would be interested in all the humorous incidents that occur. The fact that it is reviewed by *The Ladies Home Journal* indicates a particular attraction for women readers. The narrative, however, is overburdened with personalities that come to life only as a result of some act of wit or because they worked in the bargain basement (usually unsuccessfully) before becoming a Broadway star.

Mrs. Harriman leads the reader to speculate why Macy's Herald Square location isn't the central New York attraction instead of Times Square. If there is a theme, it tends to be lost in attempting to integrate Macy's to the social and economic life of the world's largest city. This would be a monumental job. Such a job would certainly require much more of a historical approach than is shown by the author. The author obviously could not decide whether it was possible and probably does not have the vision to attempt it. Problems of administrative organization are glossed over with the assumption that the reader would only be bored. This is unfair, if not an insult to the reader. The evolution of the store takes place so fast that no real picture is possible of how this nearly $400,000,000 per year business with its many branches grew to maturity. Any history of this type needs to examine the atmosphere in which it grew. In other words it is not very rewarding to write history in a void.

Even among the most casual readers there must be many who wonder at the lack of a brief summary of how and why the branches developed. Davidson's, of Atlanta, is only mentioned. Here alone is material for a most interesting chapter in corporate evolution. Business history can certainly be written in an informal chatty vein. There is no reason why it cannot include a clearer picture of the business patterns of some

American retail leaders. More space could have been devoted to the men and women who made Macy's click and the reasons for their decisions. This book would still have been an entertaining story – without sacrificing the fun. If the American shopper sometimes wonders what makes the wheels turn, *And the Price is Right* has done very little to satisfy this curiosity. Certainly it would be rewarding to know more about the development of management at Macy's. How are branch stores administered from the central office? What is the departmental breakdown of a large department store? Who makes up the administrative staff and what do they do? How is the staff trained and what are the requirements of employment as a sales clerk, buyer, technical expert? How is buying done? What are the methods used for determining what a customer will buy or continue to buy? What are the administrative problems of assuring personalized service in a giant the size of Macy's? Most of these questions are either ignored or only briefly mentioned. Incidents of a humorous nature are sometimes used to touch some of these problems. But there is a certain "reader frustration" when the narrative changes so abruptly to a completely new subject.

The attempt to explain Macy's place in New York business life fails to show more than a fleeting glimpse of this problem. Rivalries with competition are mentioned only in anecdote form. The real role of the comparison shopper as a major function of retailing is much too briefly treated. A clearer picture of this function alone would have made a real contribution. It would have been interesting to know how, why and when the comparison shopper evolved. In fact, there is a tremendous lacking of how, where and why throughout the book in almost every subject. Even the title is misleading. How do we know the price is right? The pricing policy is never clearly evolved.

There is no clear statement of other policies at Macy's – especially customer service and community projects. For instance, the famous Macy's Christmas Parade is described but never touches the more important question of why and how this developed as an advertising and public relations program. The title, therefore, is misleading and adds confusion to the establishment of a theme. Of course, there is no bibliography or statement of sources. Without doubt most of the material was collected from the people on which so much of the personalized incident material is based. Only a few "light" touches of history are tolerated (probably from Ralph Hower's book).

Mrs. Harriman's book is a very poor example of a broad trend in the field of business history. The shortcomings of the company published business history are well known. But Macy's story, by this author, seems to be even a newer trend in sugar coating. The Macy's story could be told in the "popular" form without doing any damage to the brain structure of the "average" reader. Let us hope it is not evidence of a whole mass of forthcoming hack writing pretending to be a literature of American business. *And the Price is Right* is neither history nor business history. It is rather loosely disjoined "fun-packed" literary smorgasbord.

RALPH N. TRAXLER, JR.

Emory University

Since 1845: A History of the Mutual Benefit Life Insurance Company. By Mildred F. Stone. Rutgers University Press, The Company, 1957. Pp. 236. $4.50.

The organization man has become a matter of national interest and wonderment to some; to others, of national concern and puzzlement. His manners, mores, morale, and modes of thought have been aptly described by William H. Whyte, Jr., although the latter's strictures on the organization man and his prescriptions for the amelioration of the situation are by no means universally accepted. Proverbial is the inability ofttimes of the organization man to view his firm in proper perspective. A case in point is the volume under review. Mildred F. Stone, the author of this latest history of the Mutual Benefit Life Insurance Company of Newark, New Jersey, has been with the company since 1925. She has been the first and only woman officer of the company. In 1954, she attained the position of Staff Assistant to the President. This may explain her *modus operandi* in writing this book. Miss Stone is an organization woman writing for organization men a history of the organization.

Originally written for the employees of the company, the work is composed in popular style. It is described on the jacket cover as "done in terms of such lively incident and anecdote that it will appeal to anyone's interest in the past. The reader will see here the development of a corporate personality against the backdrop of gold miners and whaling men, Victorian ladies and Gibson girls, doughboys and GI's, bewhiskered clerks and captains of industry. Here in fact, is a reflection of a century of American life." This may well have been the intention of the author. In essence, however, this volume is the usual puff history, albeit of a more informative type, written in the classic adulatory manner.

Miss Stone has a starry-eyed approach towards the company, its past and present. She places it on a pedestal, never admits explicitly that the firm made any mistakes, consciously or unconsciously, and rarely hints that it ever exhibited any weaknesses or shortcomings.

In spite of the foregoing, the business historian would be ill-advised not to read and study its contents carefully. It contains valuable information on many different aspects of a going insurance concern of national reputation and one of the giants in the life insurance industry. Founded in 1845, the Mutual Benefit is the oldest life insurance company in New Jersey and the fourth oldest in the nation.

Especially interesting is the author's discussion of the liberalization of the terms of the policy contract by the Mutual Benefit. In his scholarly "The Liberalization of the Life Insurance Contract," published in 1933, George L. Amrhein states: "The policy contract is the backbone of the institution of life insurance." Under the impetus of competition between the various companies, the insured and his beneficiary gained many valuable privileges. Although the Mutual Benefit may well have been in the forefront of the liberalization movement, it was by no means

unique in this respect. Other large companies, notably the Mutual Life Insurance Company of New York, were equally, if not more, liberal. One may be misled by Miss Stone's tendency to regard many of her company's actions as unique. She fails to note the role of competition as a catalytic agent in speeding the liberalization of the life insurance policy.

The tontine (or deferred dividend) policy the author views as a complete deception practiced upon the policyholder. While stressing the insurance evils flowing from this type of policy, Miss Stone does not refer to the tremendous impetus it gave to the business of life insurance from a marketing angle. The advantages were many in other respects. A more balanced discussion of the merits and demerits of tontines would have been in order.

The investment practices of the life insurance industry are of crucial significance for the well-being of the American economy. The discussion in this work of the evolution of investment policy and practice in the case of a large and eminently successful life insurance concern is quite valuable. Illustrative of the tremendous growth of investments are the following statistics. On March 21, 1846, the company bought short-term 6 per cent bonds of the City of Newark for $6,300. This was its first investment. During the Second War Loan drive in 1945, the Mutual Benefit subscribed for $100,000,000 in government bonds. Its experience points up the fact that the managers of life insurance companies have a tremendous responsibility to the people of the United States in pursuing prudent and sagacious investment practices.

While J. Owen Stalson's "Marketing Life Insurance," published in 1942, remains the most comprehensive and discerning account written thus far of the growth of the American life insurance marketing organization and the vital role of the agent in the industry, experiences of individual companies can shed additional light on the subject. The work under review is interesting and informative in this respect.

The failure to annotate the material and to provide a bibliography is regrettable. The business historian would be especially interested in the sources contained in the archives of the company.

The work is written in a popular vein and does not profess to be a comprehensive history of the Mutual Benefit. It does succeed in whetting the appetite of the business historian for more ample fare. If read with care, it can be of value in adding to our knowledge of life insurance operations in the United States. If swallowed without caution, its contents can be deadly for a sound interpretation of American life insurance history.

HARRIS PROSCHANSKY

Bronx, New York

• • •

Mr. Five Per Cent. By Ralph Hewins. New York, Rinehart & Co., 1958. Pp. x + 261. $4.00.

No one of the oil company histories that has appeared in recent years has been able to deal comprehensively with the incredible role in the industry's development played by Calouste Sarkis Gulbenkian. Swathing himself in silence and mystery, he moved behind the scenes in transactions that changed the course of oil history. He was, moreover, a man of unusual (to put it mildly!) personal attributes. Thus, his biography should rate as both a major journalistic and historical scoop. This distinction, however, it fails to achieve, and the failure is as disappointing as the promise of such a volume was great.

Hewins has based his book primarily on the "memoirs" that Gulbenkian himself penned and circulated narrowly in the industry and on talks with Gulbenkian's son, son-in-law, and other surviving family members. The family apparently talked freely on some subjects and allowed the author to record many of Gulbenkian's personal quirks. Thus, a reasonably clear picture of the individual emerges. All concerned are to be commended for this contribution.

It is also helpful to have the Gulbenkian memoirs published, because they contain valuable information. However, the author has so fragmented them that they lose some of their value, much of their flavor, and all of their continuity. Hewins endeavors in some instances to supplement Gulbenkian's own version of events, which do not in some known cases jibe with information from other sources, but rarely succeeds in adding substantial or convincing information on major points of interest. The biography merely states and restates Gulbenkian's contentions, contrasting these in certain instances with the equally one-sided contrary versions set forth by Henri Deterding, the Royal Dutch-Shell leader, in his scanty autobiography. Historians would, for example, have liked a far more incisive analysis of Gulbenkian's part (if any) in the formation of the Royal Dutch-Shell combine, of his negotiations leading up to the opening of Iraq to oil developments, of his operations in France leading to nationalization of oil distribution channels, of his operations in Latin America, and of his historic falling out with Deterding. Failure to treat or even to recognize major issues in Gulbenkian's career strongly suggests that the author did not familiarize himself with all available published literature. Indeed, much valuable material on Gulbenkian gathered by other historians from reliable sources is omitted entirely.

On the other hand, the volume provides a useful, if far too short, account of Gulbenkian's early career, including some rare vignettes of the opening of the Baku fields and a tantalizing miniature sketch of Mantacheff, one of oil's real "mystery men." The general reader will presumably be interested in the very excellent account of Gulbenkian's art collecting. Hewins has also rendered a vivid, frank, and moving account of the remarkable vicissitudes of the Turkish Armenians in general and of the Gulbenkian family in particular.

It seems safe to assert that this volume, which should have constituted an essential part of serious petroleum industry literature, fails to enlarge

our knowledge in an important way and even adds to the confusion and misapprehension surrounding the subject. Worst of all, the biography presumably closes out the Gulbenkian record, as far as family sources are concerned. If this is so, history is the loser and Gulbenkian's role and achievements can never be adequately validated.

GEORGE S. GIBB

Harvard Graduate School of Business Administration

• • •

Jay Gould: His Business Career, 1867–1892. By Julius Grodinsky. Philadelphia, The University of Pennsylvania Press, 1957. Pp. 610. $10.00.

For years Jay Gould has occupied, without much dispute, a central position in that rogues' gallery reserved for the group of post-Civil War business buccaneers usually referred to as "*the* robber barons." In this painstakingly thorough and detailed examination of Jay Gould's business career, Julius Grodinsky does not remove Gould's portrait from that gallery. In fact, it must be said that he is not primarily concerned with so doing, for he is no apologist for Jay Gould nor his methods. And yet, in revealing to us more information about Gould's manner of operation than we have ever had presented before, there is a certain amount of revisionism in Grodinsky's treatment of his subject. Who else among the many who have written about the economic conquistadors of this ruthless period has dared admit that Gould "had his virtues and he had his faults"? Who else has even tried to tone down the prevailing condemnation of the seemingly tireless and unscrupulous Gould with a statement like "his defects have been exaggerated beyond their true significance"? Who else, while admitting that "Gould possessed a cold-blooded unscrupulousness which enabled him to take advantage of the primitive nature of the art of corporate finance and the status of corporate law, and to adapt to his purposes the low state of political morals prevailing at the time," has even considered that Gould made any "contributions to the [railroad] industry and to the public welfare" (p. 595) in the generation following the Civil War?

Before proceeding, it is essential to make clear, as the author does in his preface, that Grodinsky has not attempted a biography of Jay Gould. Neither has he tried to appraise Jay Gould and his activities in the setting of the economic or even the business history of an era of unregulated competition. And it is also important to note that Grodinsky's interest is hardly analytical in terms of explaining what made this man "tick" – this "man who loved flowers, who was all his life the close friend of John Burroughs, the man who lived sedately and without much ostentation, and who had the adroitness, the ruthlessness and the splendid courage of the mongoose or the trapped tiger . . ." (p. 21). Rather is Grodinsky primarily concerned with describing Gould's methods and activities in the field of corporate negotiation and security trading which enabled him to build an empire, however tenuous, composed of many of the major rail-

roads of the country, the New York City elevated railway system, coal mines, and Western Union and even to attempt to control the country's gold supply to support his stock-market speculations. For this task, Grodinsky is peculiarly well qualified. As professor of finance at the Wharton School and with a reputation as a successful investor himself, Grodinsky has the technical knowledge which he has reinforced by a most comprehensive reading of the financial and railroad journals of the period with which to analyze the devious and usually complicated methods by which Gould sustained himself. To the generally available public sources Grodinsky has added extensive researches into primary sources such as the archives of the Burlington, and the North Western, the Joy, Villard, Dodge and Huntington papers. The result is a penetrating and detailed – almost day-by-day account of Gould's multifarious activities from the time of his entrance into the affairs of the Erie in 1867 until his early death at the age of 56 in 1892.

Space does not permit, nor does a review of this kind warrant, any attempt to summarize Grodinsky's account of Gould's shenanigans by which he achieved and exercised his far-flung influence on the country's railroad and financial development. In no section of the country except the Southeast did railway promoters, managers, and investors fail to feel the influence of Gould's power at some time or another during his quarter century of buccaneering. And in all this his power was exercised not as an able executive who was intimately aware of the problems of technology and railway operations (Grodinsky goes to great pains to point out that Gould was not ". . . a good corporate manager" [p. 23]); his railroads were generally grossly undermaintained and gave abominable service. Rather, whatever strength he had lay in his abilities as an investor and a speculator, and even here Grodinsky says "As a stock-market trader he must be classed as a failure" (p. 514). And in this area he was hardly content to rely on simple trading and growth through good financial management. He contrived, he connived, he manipulated, he bribed. Even in a day of much laxer standards of business morality, his tactics were hardly "above board." Unfazed by their size or their respectability Gould "took on" or allied himself with the railway industries' giants as best suited his purposes at the moment. He won many a competitive battle and erected an enormous, if short lived, railway empire but he hardly brought order to the railway world. As Grodinsky points out in his concluding chapter: "To many conservative business men of the time, interested primarily in the promotion of stability and in the maintenance of the earnings of well-established enterprises, Gould was a wrecker of existing values, 'a destroyer of the peace'. . . . He sold stocks short to depress their values and then frequently out-witted his short-selling associates by buying them back at low prices, even while his associates were still selling. . . . He made contracts not to build railroads into the territories of his rivals, only to violate them when it was profitable for him to do so. He made rate agreements only to break them. He issued statements on security values merely to confute his opponents in the stock market" (pp. 595–596).

But Grodinsky does not stop here. He goes on in his final chapter to

suggest that, whatever Gould's tactics, the havoc they wrought, or the losses they produced for Gould or others, society did gain permanently from Gould's activities. In the construction of many new roads the public benefitted through the provision of additional services and the destruction of territorial monopolies. Through his leadership in the area of speculative capital he transformed millions of dollars into production in the form of the new roads, roads which would not have been built had they had to depend on investment capital alone. And finally through the permanent reductions in railway rates, industrial and agricultural growth was speeded to the advantage of society as a whole. These conclusions it is difficult for this reviewer to accept. Many of the new roads but duplicated, uneconomically as subsequent developments were to prove, existing railway services. The rate wars and lowering of returns produced all too often poorly maintained and more poorly operated roads and in too many cases bankruptcies with their losses to investors and the resultant discouragement to savings. Furthermore, even were the economic gains genuine, can they be justified in the light of the ethical and moral degradation by which they were accomplished? In this reviewer's humble opinion Grodinsky has hardly established Jay Gould as "my White Knight."

Though I cannot accept Professor Grodinsky's views about Gould's "contributions," I do not wish to minimize the importance of this book. Few, if any, business historians can justify not reading it if only to learn more of Gould's methods of operation. It is a valuable contribution to the literature of the business and economic history of the post-Civil War decades.

Technically, the book suffers from a few shortcomings. The style is difficult at times; Grodinsky's method of introducing characters and his own system of abbreviating railway titles make it difficult even for a person somewhat familiar with the details of the railway history of the period to follow; the maps, while numerous, are not particularly helpful. Nonetheless, the technical shortcomings are minor in view of the fundamental values of the volume. It is well worth the effort.

HOWARD F. BENNETT

Northwestern University